

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT &
ENVIRONMENT MANAGEMENT PLAN**
“B1” CATEGORY - MINOR MINERAL
TMT.S. MANONMANI ROUGH STONE & GRAVEL QUARRY
IN CLUSTER OVER AN EXTENT OF 12.78.0 Ha

At
Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State

For Obtaining
Environmental Clearance under EIA Notification - 2006
Schedule Sl. No. 1 (a) (i): Mining Project

Project Proponent	Proposed Project	Extent
Tmt.S.Manonmani, W/o. Somasundaram No.7/73,Karachery, Arasampalayam, Kinathukadavu, Coimbatore District : 641 201 Mobile no: +91 98657 55889	S.F. Nos:360/1B (Part) Arasampalayam Village, Kinathukadavu Taluk Coimbatore District Tamilnadu State	1.30.0 ha
ToR obtained vide Letter No. SEIAA- TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023		

Environmental Consultant
GEO EXPLORATION AND MINING SOLUTIONS

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Baseline Monitoring Season - March 2021 to May 2021

APRIL 2023

For the easy representation the proposed quarries and existing quarries are designated as below –

PROPOSED QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Status
P1	Tmt. S. Manonmani, W/o. V. Somasundaram, 7/73, Karachery, Kinathukadavu, Coimbatore District.	360/1B (P) Arasampalayam, Kinathukadavu	1.30.00	Letter No. SEIAA- TNF.No.9106/SEAC/ToR- 1345/2022 Dated: 09.02.2023
PUBLIC HEARING COMPLETED FILE				
P2	Thiru.M. Loganathan S/o. Myilsamy Gounder, West Thottam, Karachery, Chettipalayam (via), Coimbatore	360/1A1(P), 360/1A2(P), 360/1A3, Arasampalayam & Kinathukadavu	0.78.5	Public hearing completed on 07.02.23
P3	Tmt. M.Rasamani, W/o. K. Marimuthu, Karachery, Periyakuli Post, Chettipalayam via, Coimbatore District – 641 201	361/1A & 362/1 Arasampalayam & Kinathukadavu	0.99.0	Public hearing completed on 07.02.23
P4	Thiru. M. Viswanathan, S/o. Mailsamy Gounder, West Thottam, Chettipalayam via, Coimbatore District.	360/1A5 and 360/1A6 Arasampalayam & Kinathukadavu	1.00.5	Public hearing completed on 07.02.23
P5	Thiru. K. Ravikumar S/o. R. Kumarasamy, 7/68, West Thottam, Karachery, Chettipalayam via, Coimbatore District.	355/2A (P), 355/2C (P) and 355/2D1A (P) Arasampalayam, Kinathukadavu	1.40.0	Public hearing completed on 07.02.23
P6	Thiru. V.Somasundaram, 7/73, Karachery, Kinathukadavu, Coimbatore District.	360/1B (P), 360/1E and 360/1G Arasampalayam	1.43.00	Public hearing completed on 07.02.23
P7	Tmt.R. Baby, W/o. R.S. Radhakrishnan, No.96/65G, Ruba Nagar, Ramanathapuram, Coimbatore District – 641 045	83/1C1B & 83/1C2, Pachapalayam & Suler	1.33.0	EC Granted
P8	Thiru.K. Nataraj, Theerthakinaru Thottam, Karachery, Chettipalayam via, Kinathukadavu Taluk, Coimbatore District – 641 201	84/5A Pachapalayam	1.48.0	EC Granted
TOTAL			9.72.0	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
E-1	Thiru.S. Arumachalam	83/1C1A	1.33.00	13.04.2018 to 12.04.2023
E-2	Thiru.R. Chinnasamy	83/1A(P) & 83/2(P)	1.73.00	13.04.2018 to 12.04.2023
TOTAL			3.06.00	
EXPIRED QUARRIES				
EX-1	Thiru.R. Sampathkumar	84/4C Pachapalayam	0.46.5	10.06.2014 to 09.06.2018
TOTAL			0.46.5	
TOTAL CLUSTER EXTENT			12.78.0	

Note: -

- Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016
As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI, - (ii) (5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

TERMS OF REFERENCE (ToR) COMPLIANCE

PI-Tmt. S. Manonmani,

"ToR issued vide Letter No. SEIAA- TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023"

SPECIFIC CONDITIONS		
1	The proponent is requested to carry out a survey and enumerate on the structures located within 100m, 150m, 200m, 250m, 300m, and 500m from the boundary of the mine lease area.	Noted and agreed.
2	The proponent shall discuss the funds for mitigation measures to be included in the EMP along with compensatory plantations.	Noted and agreed
3	The project proponent shall conduct the hydro geological study considering the contour map of the water table detailing the number of ground water pumping and open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (Radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Necessary data and documentation in this regard may be provided.	Details in chapter 2 and 3 surface water and ground water 1 km radius from proposal quarry.
4	The proponent shall submit the details regarding the nature of blasting activity which will be carried out.	Noted and agreed
5	The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Noted and agreed
6	The PP shall provide individual notice regarding the Public hearing to the nearby house owners located in the vicinity of the project site.	Noted and agreed
7	In the case of proposed lease in an existing (or old) quarry where the benches are non-existent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and submit an Action Plan for carrying out the realignment of the 'highwall' benches to ensure slope stability in the proposed quarry lease which shall be vetted by the concerned Assistant Director of Geology and Mining, during the time of appraisal for obtaining the EC.	Noted and agreed
8	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR1961 such as blaster, mining mate, mine foreman, II/I class mines manager appointed by the proponent.	Noted and agreed
9	Since the quarry lies in a cluster situation, the PP shall furnish a Standard Operating Procedure for carrying out the safe blasting operation while considering the adjacent quarries lies in a radial distance of 500 m from their quarry.	Details in chapter- 2
10	Details of green belt & fencing shall be included in	Noted and agreed

	the EIA Report.	
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the Proponent in the past, either in the same location or elsewhere in the State with video and photographic evidence.	Not Applicable. It's a fresh Lease.
12	<p>If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>b. Quantity of minerals mined out</p> <p>c. Highest production achieved in any one year</p> <p>d. Detail of approved depth of mining</p> <p>e. Actual depth of the mining achieved earlier</p> <p>f. Name of the person already mined in that leases area</p> <p>g. If EC and CTO already obtained, the copy of the same shall be submitted.</p> <p>h. whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</p>	Not Applicable. It's a fresh Lease.
13	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	<p>Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 1</p> <p>Geomorphology of the area is given in Chapter No 2</p> <p>Land use pattern of the project area is tabulated in the Chapter No.2.</p> <p>Land use pattern of the Study area is tabulated in the Chapter No.3</p>
14	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	Drone video covering the cluster area clearly stating the extent of the operation will be submitted in the final EIA report
15	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Fencing erected around the boundary barrier.
16	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, The anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	Total Mineable Reserves, Proposed production and working methodology given in the Chapter No 2
17	The Project Proponent shall provide the organization chart indicating the appointment of	Organization chart indicating Proposal for the appointment of Statutory officials is given in the

	various statutory officials and other competent persons to be appointed as per the provisions of Mines Act, 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment	Chapter No.7
18	The Proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study	Baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality, & flora/fauna including traffic/vehicular movement study to assess the cumulative impact of the proposed project on the environment is prepared as a Draft EIA EMP and will be finalized after public consultation and will be submitted as Final EIA /EMP Report
19	The Proponent shall carry out the Cumulative impact study due to mining operations: carried out in the quarry specifically with reference to the specific environment in terms of air pollution, water pollution & Health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	The cumulative impact study has been carried out with reference to the Air Pollution, Water Pollution and Health impacts around the project site is discussed in Chapter 7.
20	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Detailed discussed in chapter 3
21	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water	Detailed discussion Land environment in chapter 3
22	bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given	Land use pattern of the study area discussed in chapter 3.
23	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided	No overburden waste dump present in this quarry
24	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Noted and agreed
25	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided	Detailed discussed in chapter 4.
26	Impact on local transport infrastructure due to the Project should be indicated.	Detailed discussed in chapter 2.
27	A tree survey study shall be carried out (nos., name of the species, age, diameter etc..) both within the mining lease applied area & 300m buffer zone and	There are few trees within the lease applied area. There are few trees in buffer zone of 300 m from the

	its management during mining activity.	proposed lease area and it shall not be cut down or have any impact due to the mining activities and project proponent ensures to carrying out activities like watering for preserving the green cover around 300 m from proposed project site. The detailed Greenbelt Development Plan is discussed in Chapter No. 4.
28.	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Detailed under Chapter 4
29.	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SELAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.	Details will be provided in Final EIA/EMP report after the completion of public hearing
30.	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Public hearing advertisement will be made as per the ToR Recommendations
31.	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	Noted & agreed.
32.	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted & agreed.
33.	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	It is proposed to plant 780 nos of trees in the 7.5m safety barrier and approach roads
34.	Taller/one year old Saplings raised in appropriate size of bags preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	Noted & agreed.
35.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Detailed under Chapter 7,
36.	A Risk Assessment and management Plan shall be	Detailed under Chapter 7,

	prepared and included in the ELA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	
37	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Detailed discussed in the chapter 4.
38	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Detailed discussed in the chapter 10.
39	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Socio Economic study has been carried out the details are given in the Chapter No.3.
40	Details of litigation pending against the project, if any, with direction /Order passed by any Court of Law against the Project should be given.	No litigation pending cases
41	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Detailed discussed in the chapter 8.
42	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCC.	Noted & and the compliance report will be submitted along with Final EIA report.
43	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine	Detail discussed in chapter 10.
44	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted & agreed
ADDITIONAL CONDITIONS		
Annexure -B Cluster Management Committee		
1	Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Details in chapter1 and 7 salient features of quarry with existing quarry.
2	The members must coordinate among themselves.	Noted & agreed

	for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Noted & agreed
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Transport details in chapter-2
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Noted & agreed
6	The Cluster Management Committee shall from Environmental Policy to practice sustainable mining in scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Noted & agreed
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Noted & agreed
8	The committee shall furnish the Emergency Management plan within the cluster.	Details discussed in chapter 7.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Details discussed in chapter 10.
10	The committee shall furnish an action plan to achieve sustainable development goals with inference to water, sanitation & safety.	Noted & agreed
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Detailed discussed in chapter 7.
Impact study of mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as precise area communication order issued from reputed search institutions on the following. a) Soil health and soil biological, physical land chemical features. b) Climate change leading to droughts, floods etc. c) Pollution leading to release of greenhouse gases (GHG), rise in temperature and Livelihood of the local people. d) Possibilities of water contamination and impact on aquatic ecosystem health. e) Agriculture, forestry and traditional practices. f) Hydrothermal/Geothermal effect due to destruction in the environment. g) Bio-geochemical processes and its foot prints	Noted & agreed

	including environmental trees: h) Sediment geochemistry in the surface streams:	
13	Impact on surrounding agricultural fields around the proposed mining Area.	Detailed discussed in chapter 4.
14	Impact on soil flora & Vegetation around the project site.	Detailed discussed in chapter 4.
15	Details of type of vegetation including no. of trees & Shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details in Chapter 2,3 and 7
16	The EIA should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural ecosystem.	Details in Chapter 3
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed
18	The project proponent shall study and furnish the impact of project on adjoining Patta lands, Horticulture, Agriculture and livestock.	The project area is bounded by Existing quarries on the East, South and west side and crusher located on North side. Nearest Coconut agriculture land is situated South side of the area. Proponent proposed to erect green mesh along with fencing on the South side besides, Budgetary allocation given in the Chapter No. 10.
Forests		
19.	The project proponent shall detail study on Impact of mining on Reserve forests free ranging wildlife.	Noted and agreed, there is no reserve forest and wildlife in the buffer zone.
20.	The Environmental Impact assessment should study impact on forests, vegetation, endemic, vulnerable and endangered indigeneous flora and fauna.	Detailed discussed in the chapter 4.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for production.	Detailed discussed in the chapter 4.
22	The Environmental Impact Assessment should study impact on protected areas, RF, National Park, Corridors and wildlife pathways, near project site.	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
Water Environment		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	Detailed discussed in the chapter 3.
24	Erosion Control Measures.	
25	Detailed study shall be carried out in regard to impact of mining aroud the proposed mine lease area on the nearby villages, waterbodies/Rivers and	Details in Chapter 2

	any ecological fragile areas.	
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the waterbody and Reservoir.	Details in Chapter 2 and 4 impact of bio diversity.
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment by the activities.	Noted & agreed
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Noted & agreed. Detailed under Chapter 3.
29	The terms of Reference should specifically study impact on soil health, Soil Erosion, the soil physical, chemical components and microbial components.	Details in Chapter 3 soil environment.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Nearest agriculture activity is coconut plantation located North side of the project area. Proponent erected fencing in the previous lease period. The same will be reconstructed around the quarry pits.
Energy		
31	The measure taken control Noise, Air, water, dust control and steps adopted to efficiently utilize the energy shall be furnished.	Details in Chapter 3 environmental monitoring details.
Climate changes		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest to measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Details of carbon emission and mitigation activities are given in the Chapter No.4
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and soil and below soil carbon stock.	Details in Chapter-3 for meteorological and climate-weather data representation of graphs.
Mine Closure Plan		
34	Detailed mine closure plan covering the entire mine lease period as per precise area communication order issued.	Details in Chapter 2 mine closure plan
EMP		
35	Detailed environment management plan along with adaptation, mitigation and remedial strategies covering the entire mine lease period as per precise area communication order issued.	Details in EMP in chapter 10
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	Details in Green belt development in chapter 7
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	A Risk Assessment and management Plan Chapter- 7
Disaster management plan		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope	Disaster management Plan details in Chapter-7

	with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	
Others		
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, Schools, Archaeological sites, structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.,	Details in chapter-2 with attached annexure
40	As per the MoEF &CC office memorandum F.No.22-65/2017-IA III dated:30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Noted and agreed
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastics & Microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Details of carbon emission and mitigation activities are given in the Chapter No.4
42	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed discussed in the chapter 10.

STANDARD TERMS OF REFERENCE FOR PROPOSAL QUARRY

STANDARD TERMS OF REFERENCE		
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t the highest production achieved prior to 1994.	Not applicable. The project is Not a violation category. This proposal falls under B1 Category (Cluster situation)
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	Document is enclosed along with Approved Mining Plan as Annexure Volume 1 for the respective projects.
3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	Noted & agreed.
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study	Satellite imagery of the project area along with boundary co-ordinates is given in the Chapter No.1 Figure No.1.1 Geomorphology of the area is given in Chapter No.2 Figure No.2.10.

	area (core and buffer zone).	Land use pattern of the project area is tabulated in the Chapter No.2. Table No.2.3 Land use pattern of the Study area is tabulated in the Chapter No.3 Table No 3.2
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Map showing – Geology map of the project area covering 10km radius - Figure No. 2.11. Geomorphology of the area is given in Chapter No 2 Figure No 2.10.
6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1.
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	Noted & Agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is for the Life of the Mine / lease period.
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3.

11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given	Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out Rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area.
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not Applicable. There is no Forest Land involved in the proposed project area. The proposed project area is a government land. Approved Mining Plan is enclosed as Annexure Volume 1.
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	Not Applicable. The proposed project area does not involve any Forest Land.
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest within the Study Area.
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves (existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
18	A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN.

	found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	There is no endangered red list species found in the study area. Detailed in Chapter No. 3.
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'.
20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable. The project doesn't attract The C. R. Z. Notification, 2018.
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.
22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline Data were collected for One Season March-May (Summer Season) 2021 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
23	Air quality modelling should be carried out for	Air Quality Modelling for prediction of incremental

	prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	GLC's of pollutant was carried out using AERMOD view 9.6.1 Model. Details in Chapter No: 4.
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13.
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4.
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The ground water table is at 65-70m below ground level. In these projects, ultimate depth is 27m Maximum from the general ground profile. It is inferred the quarrying activities in the Cumulative EIA project (Quarries) will not intersect the Ground water table.
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Highest elevation of the project area is 380m AMSL Ultimate depth of the mine is 27m AMSL Water level in the area is 65m BGL to 70m BGL.
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4, Table No.4.12
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2.

	under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2.]
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Discussed in chapter No 2.
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Details in Chapter 10.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact and details of the medical examination to the workers given in the Details in Chapter 10.
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Details in Chapter No. 4
37	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Details of Socio Economic is given in the Chapter No 3.
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environment Management Plan Chapter 10.
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Public hearing points and commitment of the project proponent will be updated in the final EIA & EMP Report.

40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is given in the Chapter No 2, Table No 2.15.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Detailed under Chapter 7
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
44	Besides the above, the below mentioned general points are also to be followed: -	
A	Executive Summary of the EIA/EMP Report	Encloses as separate volume
B	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
C	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are given properly.
D	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC / NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Copy of Baseline monitoring reports are enclosed with this draft as annexure
E	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Questionnaire of the project will be submitted in final EIA report after complying the public hearing points.
G	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are followed.
H	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	There are no changes in Form-I, Mining plan and Pre-feasibility report for all the projects.
I	As per the circular no. J-11011/618/2010-IA. II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	Not applicable.
J	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area,	Satellite imagery of the project area along with boundary co ordinates is given in the Chapter No 1 Figure No .1.1

(ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Geomorphology of the area is given in Chapter No 2 Figure No 2.10.
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1. INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

Rough Stone & Gravel is the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of proposed & existing quarries of Tmt. S. Manonmani, Rough Stone & Gravel Quarry cluster consisting of Eight Proposed and two Existing Quarry with total extent of Cluster of 12.78.0 ha in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

Baseline Monitoring study has been carried out during the period of March to May 2021 and this EIA/EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

1.1 PURPOSE OF THE REPORT

The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, Mining Projects are classified under two categories i.e. A (> 100 Ha) and B (\leq 100 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix-XI.

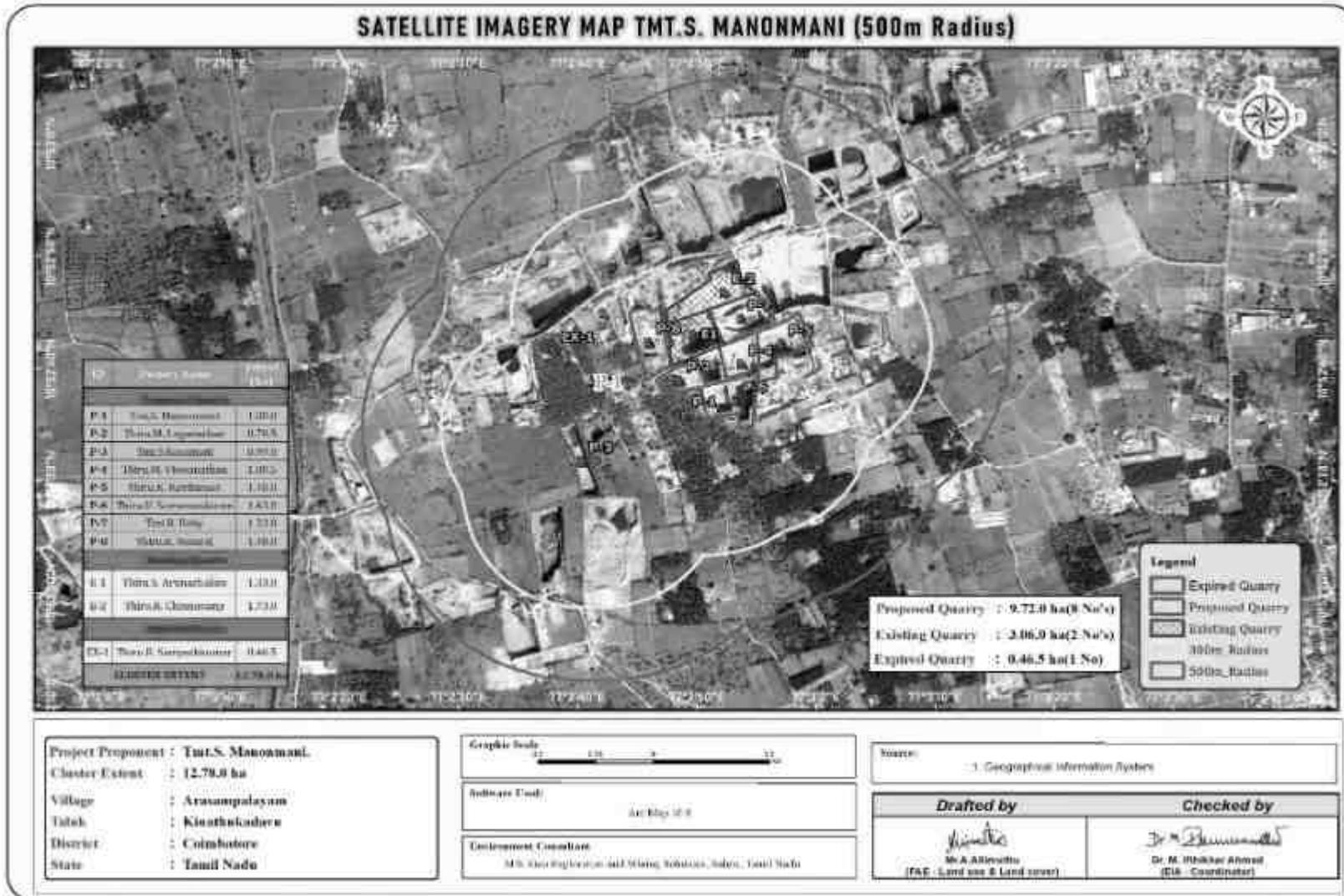
Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2018 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B- 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed project is categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

"Draft EIA report prepared on the basis of ToR Issued ToR for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

FIGURE.1.1 SATELLITE IMAGERY CLUSTER QUARRIES

SATELLITE IMAGERY MAP TMT.S. MANONMANI (500m Radius)



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project

TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Project	Tmt. S. Manonmani, Rough Stone & Gravel Quarry Project
S.F. No.	360/1B (P)
Extent	1.30.0 ha
Land Type	Patta Land
Village Taluk and District	Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District

Source: Approved Mining Plan.

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Company	Tmt. S. Manonmani Rough Stone & Gravel Quarry Project
Address	W/o. Somasundaram No.7/73, Karachery, Arasampalayam, Kinathukadavu, Coimbatore District. Pin:641 201
Mobile	+91 98657 55889
Status	Individual

Source: Approved Mining Plan.

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

Common Mining Methodology is proposed for one proposed mine.

The quarrying operation is to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT

Name of the Quarry	Tmt. S. Manonmani, Rough Stone & Gravel Quarry	
Toposheet No	58-F/01	
Latitude between	10°52'33.75"N to 10°52'38.99"N	
Longitude between	77°02'48.41"E to 77°02'53.53"E	
Highest Elevation	380 m AMSL	
Proposed Depth of Mining	27m (2m Gravel + 25m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³

	3,25,000	26,000
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	38,925	6,794
Ultimate Pit Dimension	79m (L) x 43m (W) x 27m (2m Gravel + 25m Rough Stone)	
Water Level in the surrounds area	70 - 65m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area exhibits Plain topography. The area has gentle sloping towards Western side. The altitude of the area is 380 m (max) above mean sea level. The area is covered by 2m thickness of Gravel Formation. Massive Charnockite is found after 2m (Gravel Formation) which is clearly inferred from the nearby existing quarrying pit.	
Machinery proposed	Jack Hammer	2 Nos.
	Compressor	1 No
	Excavator with bucket and rock breaker	1 No
	Tipper	1 No
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	14 Nos.	
Project Cost	Rs.24,49,000/-	
EMP Cost	Rs. 3,80,000/-	
CER Cost	Rs 5,00,000/-	
Nearby Water Bodies	Water bodies	Distance & Direction
	Odai	50m Safety West
	Tank Near Myleripalayam	850m_NE
	Tank Near Chettipalayam	2.5km_SW
	Kothavadi Lake	4.0km_NW
Odai near Kothavadi	7.0km_SE	
Greenbelt Development Plan	Proposed to plant 780 trees in the 7.5m Safety Zone and panchayat roads.	
Proposed Water Requirement	1.2 KLD	
Nearest Habitation	Karacheri - 2.0Km- SE	

Source: Approved Mining Plan

1.3.2 Location of the Project

- The proposed quarry project falls in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District.
- Tmt. S. Manonmani, cluster is located about 4 km Northwest side of Arasampalayam Village.
- The Arasampalayam Village is located about 4 km Northwest of Kinathukadavu Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-F/01. The area lies between the Latitudes of $10^{\circ}52'33.75''\text{N}$ to $10^{\circ}52'38.99''\text{N}$ and Longitudes of $77^{\circ}02'48.41''\text{E}$ to $77^{\circ}02'53.53''\text{E}$

FIGURE 1.1A KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE

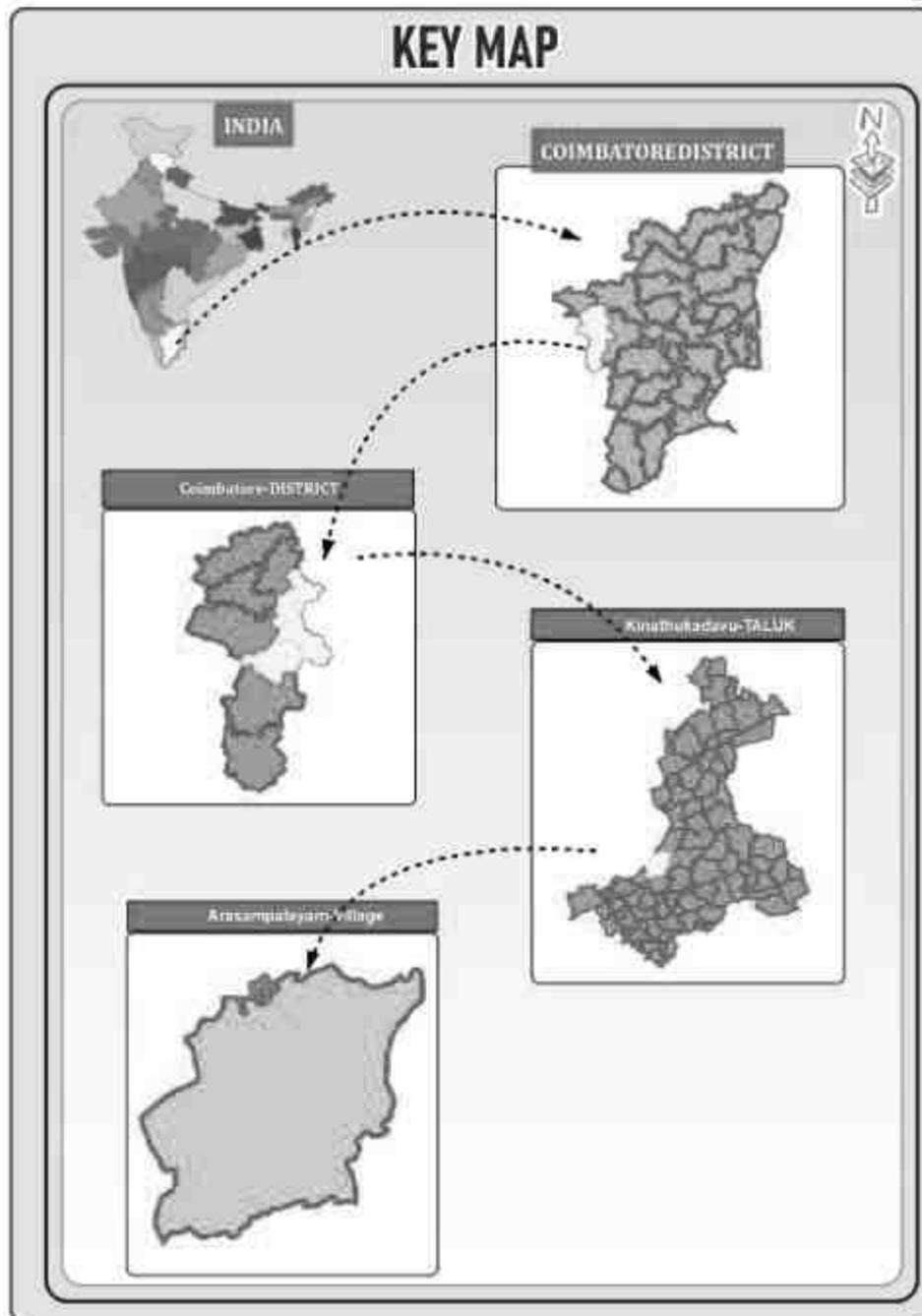
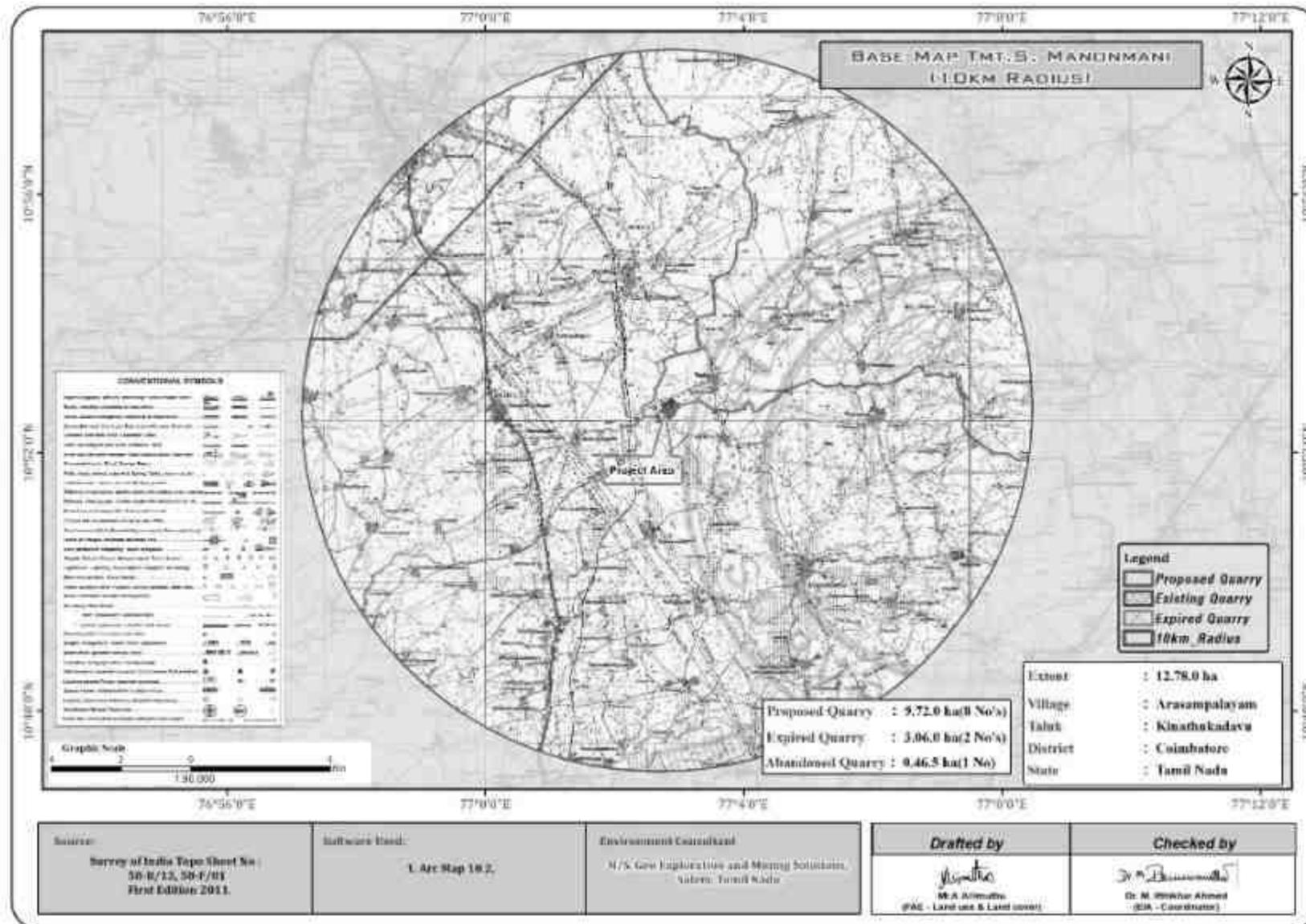


FIGURE 1.2: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 10 KM RADIUS



1.4 Environmental Clearance

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below: -

1. Screening
2. Scoping
3. Public consultation &
4. Appraisal

SCREENING

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 08.07.2021 & 21.12.2021
- Precise Area Communication Letter was issued by the District Collector, Coimbatore, vide letter Rc.No.857/Mines/2021, Dated: 01.02.2022
- The Mining Plan was prepared by Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc.No.857/Mines/2021, Dated: 15.02.2022
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/73759/2022, Dated: 16.03.2022

SCOPING

- The proposal was placed in 345th SEAC meeting held on 10/01/2023 and the committee recommended for issue of ToR.
- The proposal was considered in 590th SEIAA meeting held on 09.02.2023 and issued ToR vide Lr No. SEIAA-TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023.

PUBLIC CONSULTATION –

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

APPRAISAL –

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance. The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
- EIA Notification, 14th September, 2006
 - Lr No. SEIAA-TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023.
 - Approved Mining Plan.

1.5 TERMS OF REFERENCE (ToR)

ToR issued vide –

- ToR Lr No. SEIAA-TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023. Area detailed in Page No. I – XLIX.

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The respective proposed project proponents shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC.

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the summer season (March to May 2021) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

TABLE 1.4: ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM10, PM 2.5, SO2, NO2	Continuous, 24-hourly samples twice a week for three months at 10 locations (3 Core & 7 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 7 locations – 6 ground water and 1 surface water samples; once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	10 locations – data monitored once for 24 hours during EIA study
6	Soil Characteristics	Physical and Chemical Parameters	Once at 8 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary

			survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk analysis done for the risk associated with mining.

Source: Field Monitoring Data

The data has been collected as per the requirement of the ToR issued by SEIAA – TN.

1.8.1 Regulatory Compliance & Applicable Laws/Regulations

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR Lr No. SEIAA-TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023.

CHAPTER – 2: PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone Quarries requires Environmental Clearance. There are eight proposed and two existing quarry forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is **12.78.0 ha**

As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018; and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

2.1 DESCRIPTION OF THE PROJECT

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries.

Method of mining is common for all the proposed quarries in the cluster. Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting. hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

2.2 LOCATION OF THE PROJECT

- The proposed quarry project falls in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District.
- Tmt. S. Manonmani, cluster is located about 4 km Northwest side of Arasampalayam Village
- The Arasampalayam Village is located about 4 km Northwest of Kinathukadavu Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-F/01. The area lies between the Latitudes of 10°52'33.75"N to 10°52'38.99"N and Longitudes of 77°02'48.41"E to 77°02'53.53"E

The project does not fall within 10 km radius of any Eco – sensitive zone, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY

Nearest Roadway	NH-83- Coimbatore – Dindigul – 4.0km-W SH-163- Palladam - Othakalmandapam road- 4.0km-NW
Nearest Village	Karacheri - 2.0 km – SE
Nearest Town	Kinathukadavu – 6.5km – SW
Nearest Railway	Kinathukadavu - 6km – SW
Nearest Airport	Coimbatore - 18km – N
Seaport	Kochi - 140km – Southwest

Source: Survey of India Toposheet

TABLE 2.2: BOUNDARY CO-ORDINATES OF PROPOSED PROJECT

Boundary Pillar No.	Latitude	Longitude
1	10° 52' 33.14"N	77° 02' 50.67"E
2	10° 52' 33.60"N	77° 02' 50.14"E
3	10° 52' 34.72"N	77° 02' 49.02"E
4	10° 52' 36.32"N	77° 02' 46.54"E
5	10° 52' 37.40"N	77° 02' 46.14"E
6	10° 52' 38.38"N	77° 02' 50.31"E
7	10° 52' 35.45"N	77° 02' 50.87"E
8	10° 52' 35.34"N	77° 02' 50.40"E
9	10° 52' 34.31"N	77° 02' 50.73"E
10	10° 52' 34.39"N	77° 02' 51.02"E
11	10° 52' 33.27"N	77° 02' 51.26"E

Source: Approved Mining Plans

FIGURE 2.1: TOPOGRAPHICAL VIEW OF THE PROJECT SITES

FIGURE 2.2: GOOGLE IMAGE ROUGH STONE AND GRAVEL QUARRY PROJECT AREAS



FIGURE 2.3: QUARRY LEASE PLAN / SURFACE PLAN

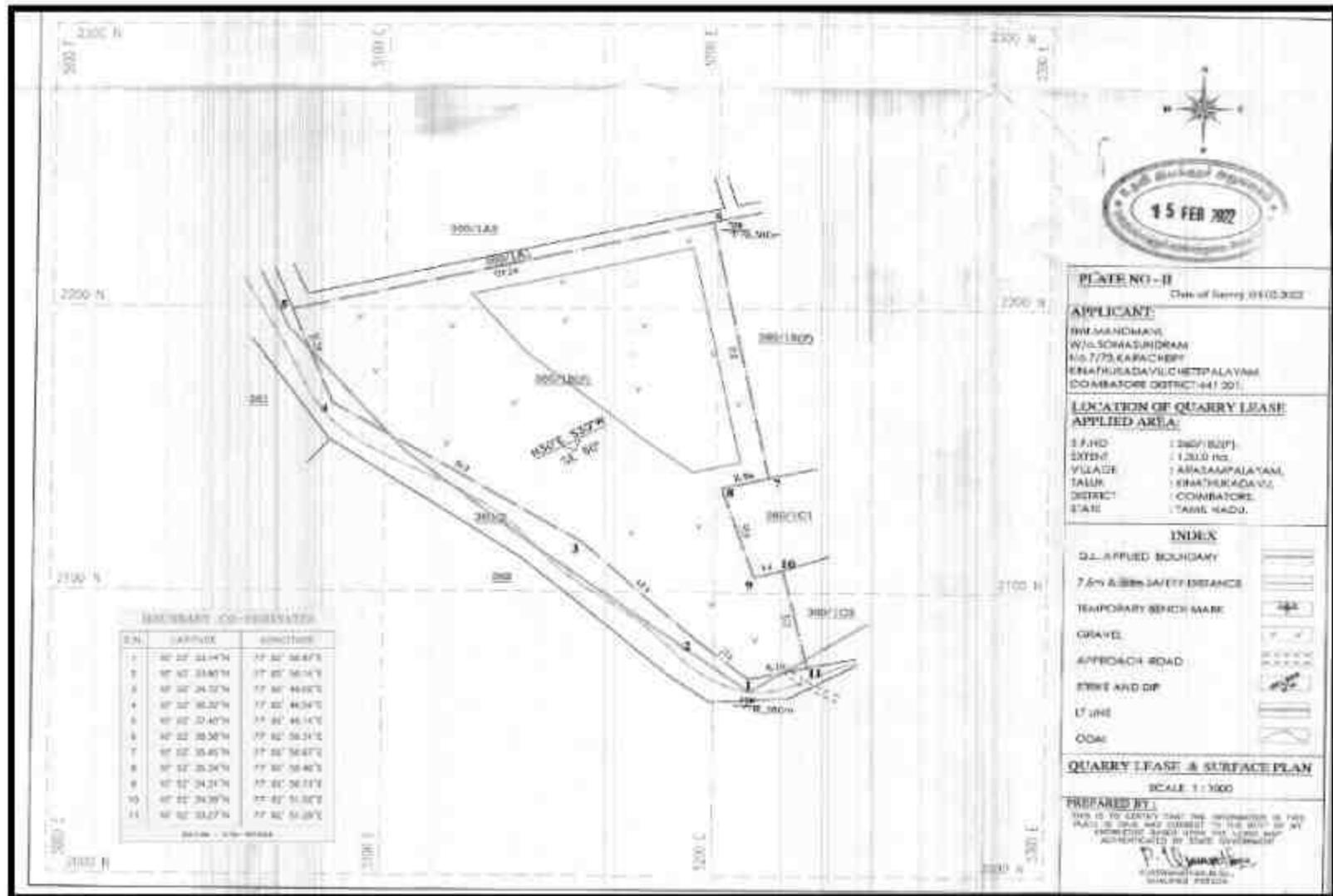


FIGURE 2.4: SATELLITE IMAGERY OF CLUSTER QUARRIES

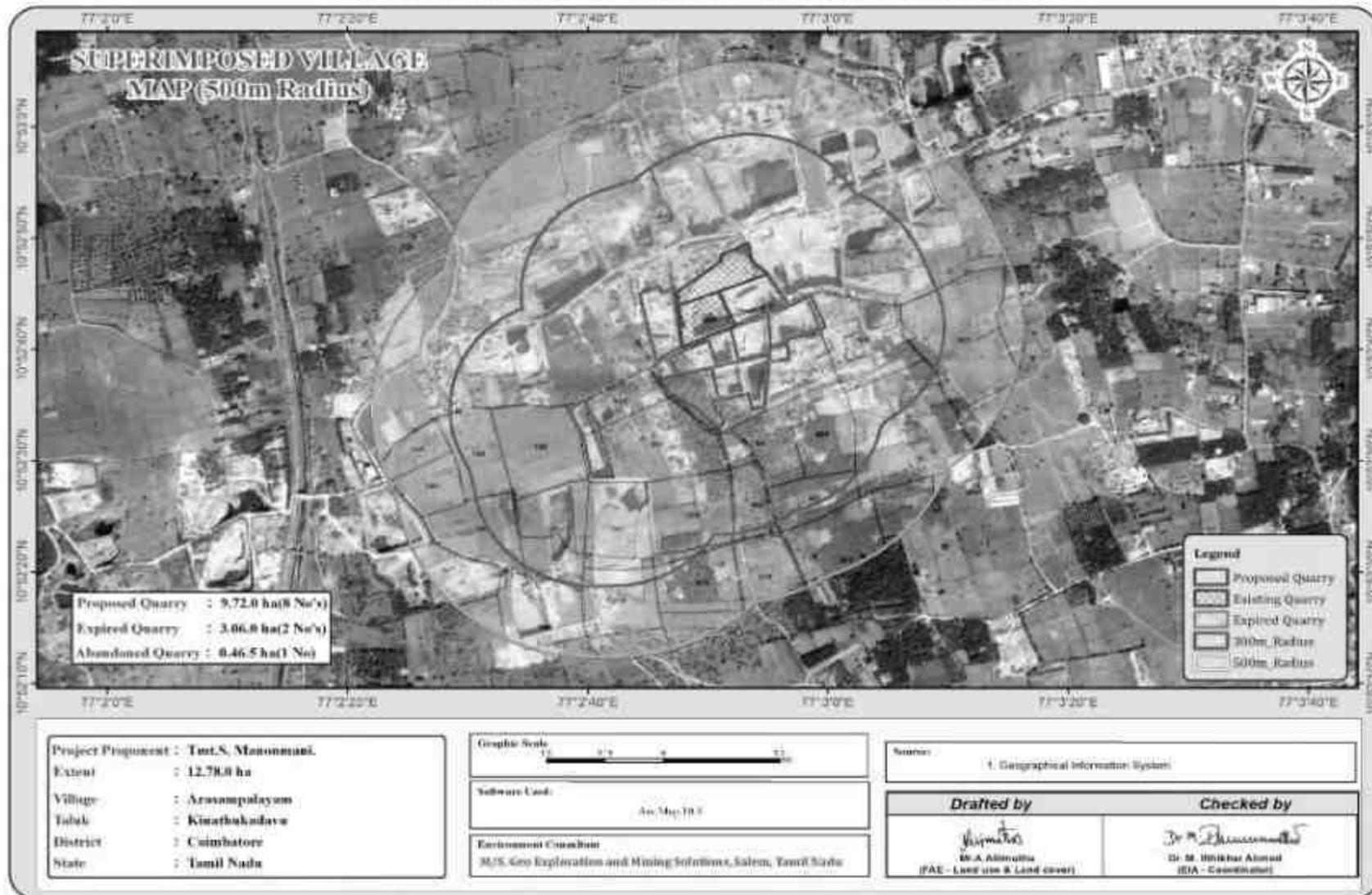


FIGURE 2.5: DIGITIZED MAP OF THE STUDY AREA (10 KM RADIUS FROM PROJECT SITE)

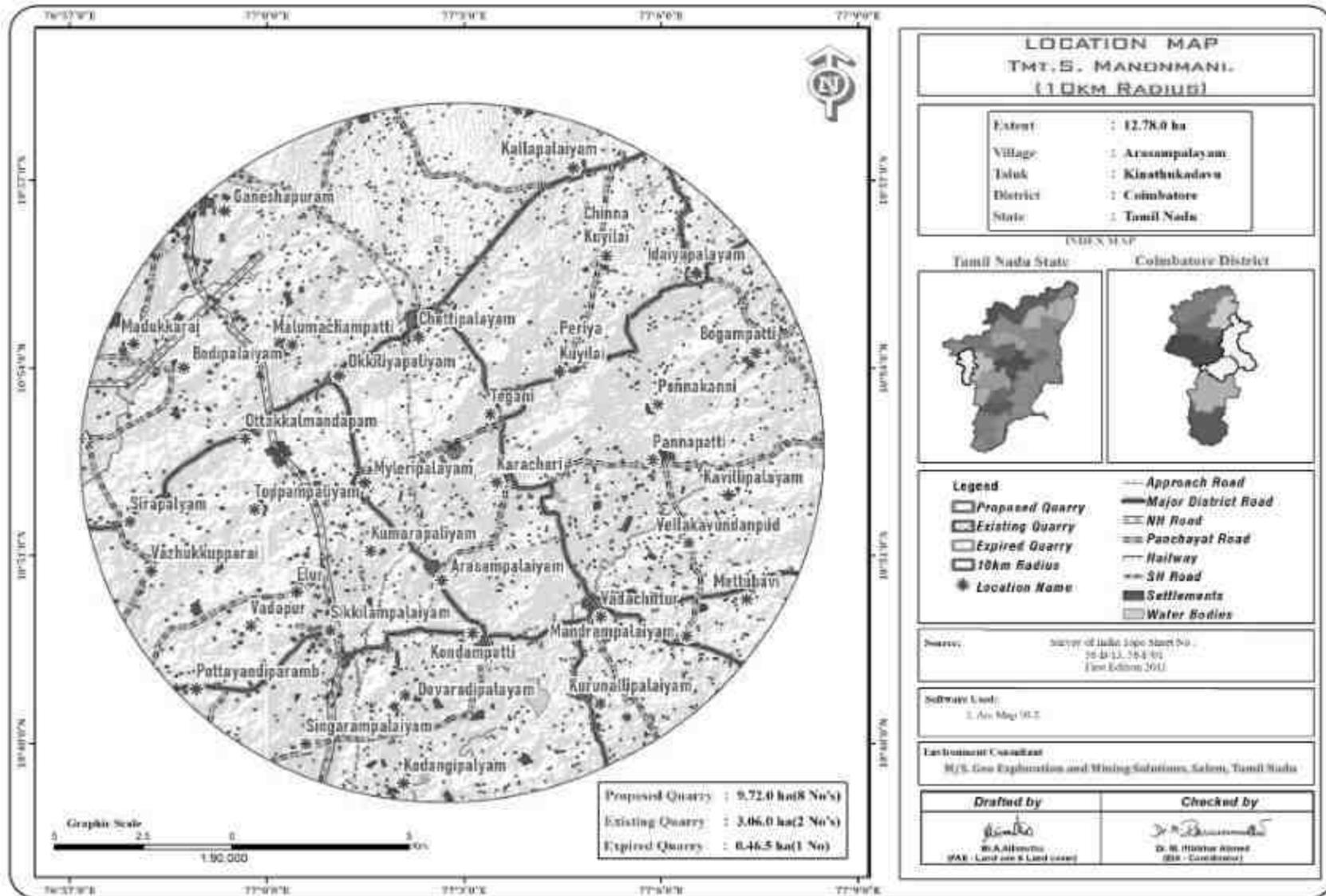


FIGURE 2.6: DIGITIZED MAP OF THE STUDY AREA (5 KM RADIUS FROM PROJECT SITE)

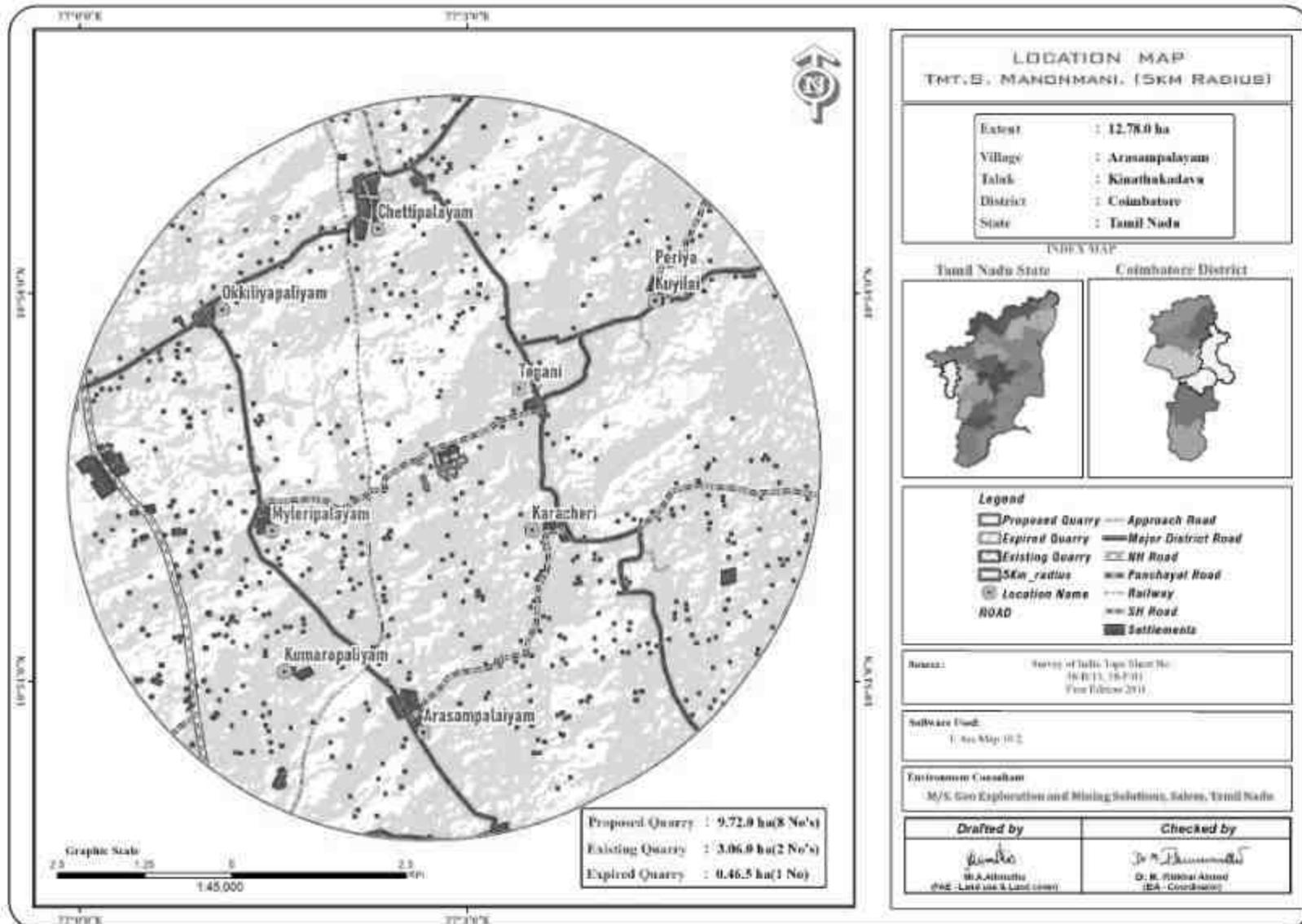
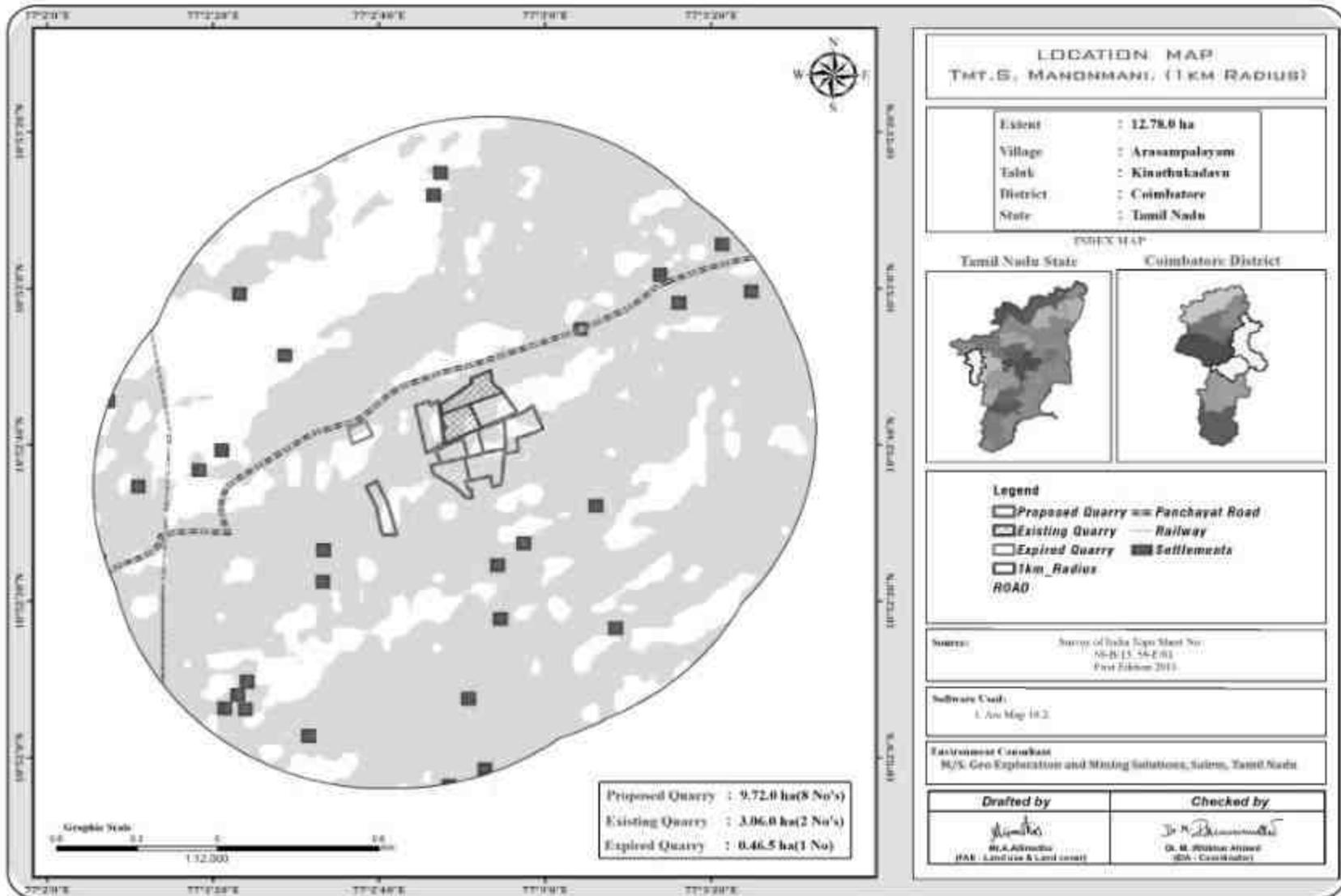


FIGURE 2.7: DIGITIZED MAP OF THE STUDY AREA (1 KM RADIUS FROM PROJECT SITE)



2.2.1 Project Area

- (i) All the projects under cluster are site specific, there is No beneficiation or processing proposed inside the project area.
- (ii) There is no forest land involved in the proposed project area and is devoid of major vegetation and trees.

TABLE 2.3 – LAND USE PATTERN

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area under Quarrying	Nil	0.34.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.14.6
Unutilized Area	1.30.0	0.78.4
Grand Total	1.30.0	1.30.0

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT

PARTICULARS	DETAILS	
	Rough Stone (5Year Plan period)	Gravel (3 Years Plan period)
Geological Resources in m ³	3,25,000	26,000
Mineable Reserves in m ³	38,925	6,794
Yearwise Production in m ³	38,925	6,794
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m ³	26	8
No of Lorry loads (12m ³ per load)	2	1
Total Depth of Mining	27m (2m Gravel + 25m Rough Stone)	

Source: Approved mining plan.

2.3 Geology

2.3.1 Regional Geology

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N30°E to S30°W with dipping SE60°.

Stratigraphy of the area –

↑	AGE	FORMATION
	Recent	Quaternary weathered formation (Gravel)
	-----Unconformity-----	
	Archaean	Charnockite

Peninsular Gneiss complex Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age.

The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Suler, Madukkarai and Pollachi taluks.

The fissile homblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsita – kyanite quartzites, ferruginous quartzite (Satya Mangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliampatti Granites respectively. The quaternary alluvium is seen in the Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore.

Source: District Survey Report for Minor Minerals Coimbatore District – May 2019

<https://www.tnmines.tn.gov.in/pdf/dsr/9.pdf>

2.3.2 Local Geology: -

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. All the project areas is plain terrain, all the project areas is covered with gravel formation of 2m to 3m thickness; Massive Charnockite formation is found after 2 m to 3 m gravel formation which is clearly inferred from the nearby existing quarry pit.

2.3.3 Hydrogeology

Coimbatore District is underlain by crystalline metamorphic complex in the western parts of district and sedimentary tract in eastern side. An area of 4551 Sq.km is covered by crystalline rocks (63%) and 2671 Sq.km is covered by sediments (37%). The general geological sequence of formation is given below:

Quaternary - Laterites, Sands and Clays

Tertiary - Sandstone, Gravels and Clays

Cretaceous - Limestone, Calcareous Sandstone and Clay unconformity.

Archaean - Charnockites, Gneisses, Granites, Dolerites and Pegmatite

- The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of Archaean age intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting.
- Ground Water occurs under the phreatic condition and wherever there are deep seated fractures, it occurs under semi-confined to confined conditions.
- Occurrence of Ground Water in hard rock depends upon the intensity and depth of weathering, fractures and fissures present in the rocks.
- Granites and gneisses yield moderately compared to the yield in Charnockites.
- Depth of well in hard rock generally ranges between 8 and 15m below ground level.

- Generally, yield in open wells ranges from 30 to 250m³ /day and in bore well between 260 and 430 m³ /day. The weathered thickness varies from 2.5 m to 42m in general there are 3 to 5 fracture zones within 100 m and 1 to 4 fracture zones between 100 and 200 m.

The Cretaceous formation is represented by Arenaceous Lime stone, Calcareous sand - stone and marl. The Tertiary formation is argillaceous comprising of Silty clay stones, argillaceous Lime stone.

The Quaternary deposits represented by the river deposits of Ponnaiyar and Varahanadhi spread over as patches in Tiruppur District. The alluvium consists of unconsolidated sands, gravelly sands, clays and clayey sands. The thickness of the sands ranges between 15 and 25 m in the alluvial formation which also form potential aquifers. In some areas, sand stone of tertiary formation are the potential groundwater reservoirs.

Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Coimbatore District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

Charnockite

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

Aquifer Parameters

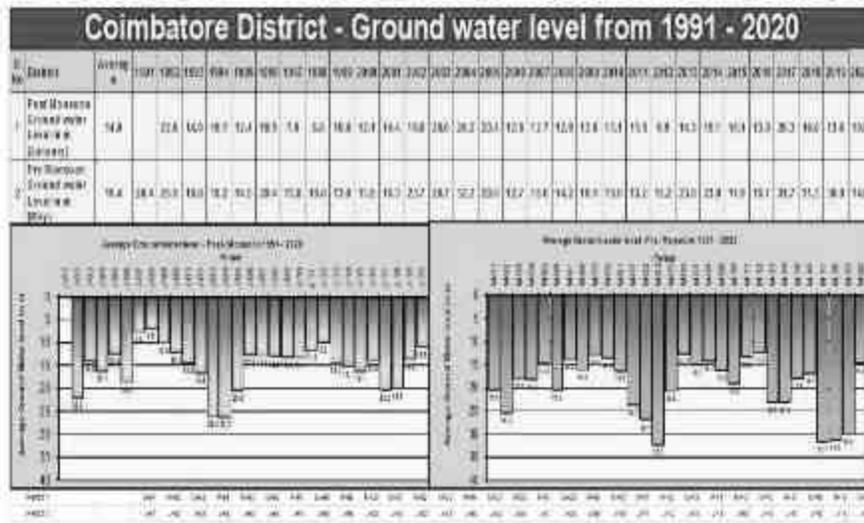
The thickness of aquifer in this district is highly erratic and varies between 15 m to 40 m below ground level. The inter granular Porosity is essentially dependent on the intensity and degree of weathering and fracture development in the bed rock. As discussed earlier deep weathering has developed in Gneissic formations and moderate weathering in charnockite formations. The range of aquifer parameters in hard rock and sedimentary formations are given below:

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

Parameters	Range
Well yield in LPM	50-300 lpm
Transmissivity (T) m ² /day	1.49-164.18 m ² /day
Permeability (K) m/day	0.25-26.75 m/day

Source: <http://nwm.gov.in/sites/default/files/Notes%20on%20Coimbatore%20District.pdf>

FIGURE 2.8: GROUND WATER LEVEL VARIATIONS OF COIMBATORE DISTRICT



Source: <https://www.twadboard.tn.gov.in/content/coimbatore>

TABLE 2.10: GROUND WATER LEVEL VARIATIONS OF COIMBATORE DISTRICT

Jan 2013	May 2013	Jan 2014	May 2014	Jan 2015	May 2015	Jan 2016	May 2016	Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	5 Years Pre Monsoon Average	5Years Post Monsoon Average
14.3	16.7	15.1	23.0	16.11	16.0	13.79	16.7	20.36	29.7	19.8	22.3	13.6	17.6	16.1	20.3

Source: <https://www.twadboard.tn.gov.in/content/coimbatore>

FIGURE 2.9: REGIONAL GEOLOGY MAP

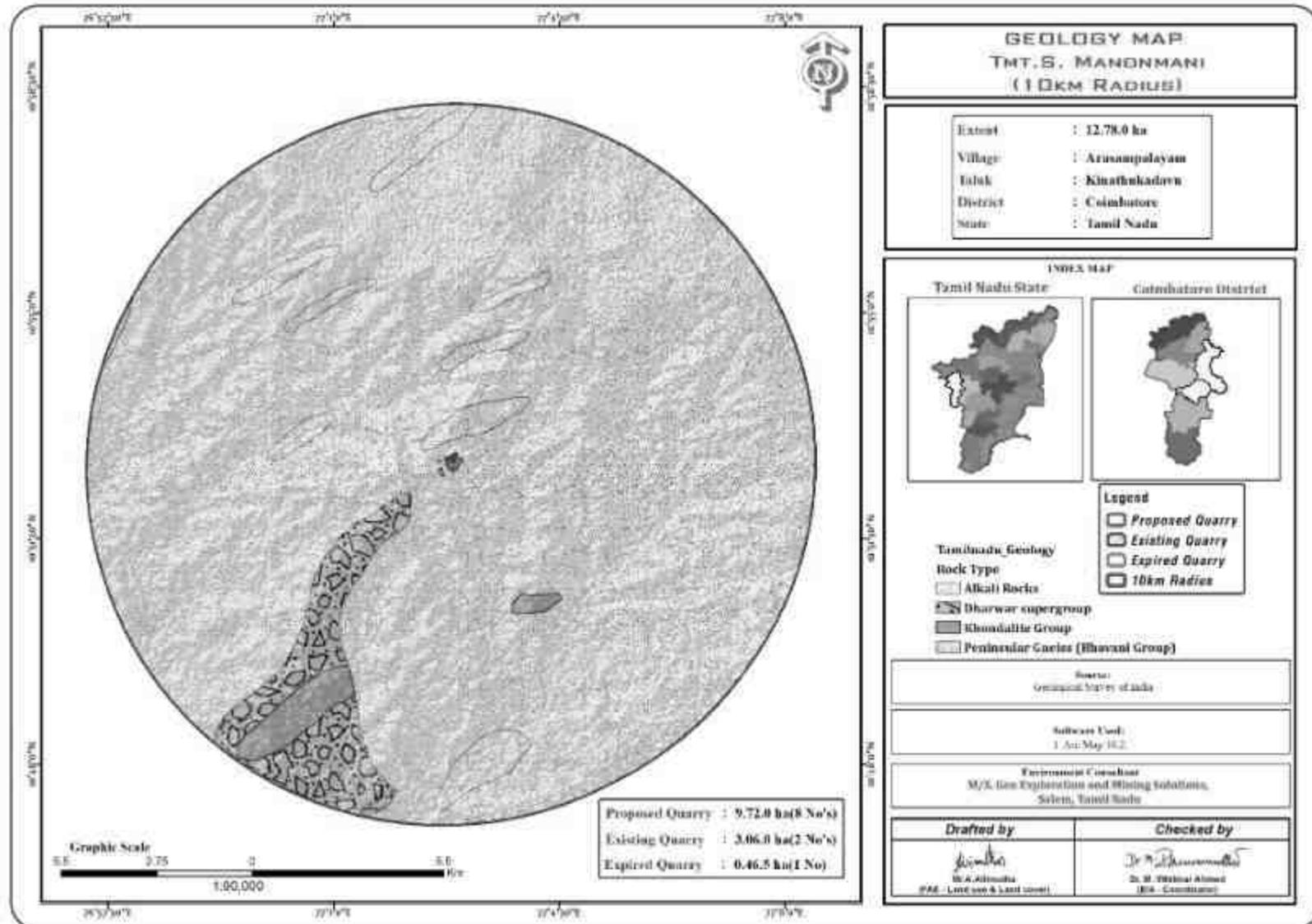


FIGURE 2.10: GEOMORPHOLOGY MAP

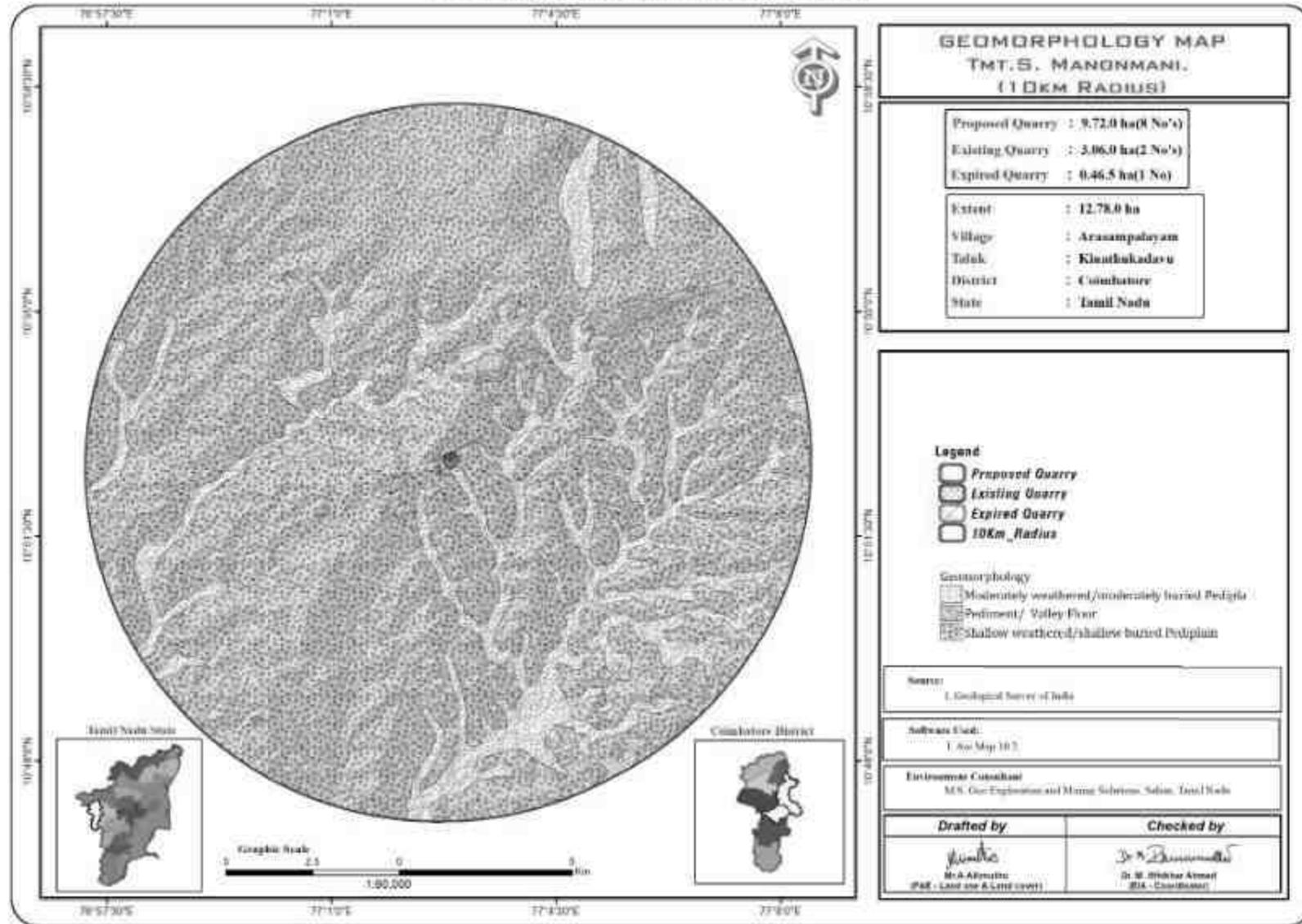
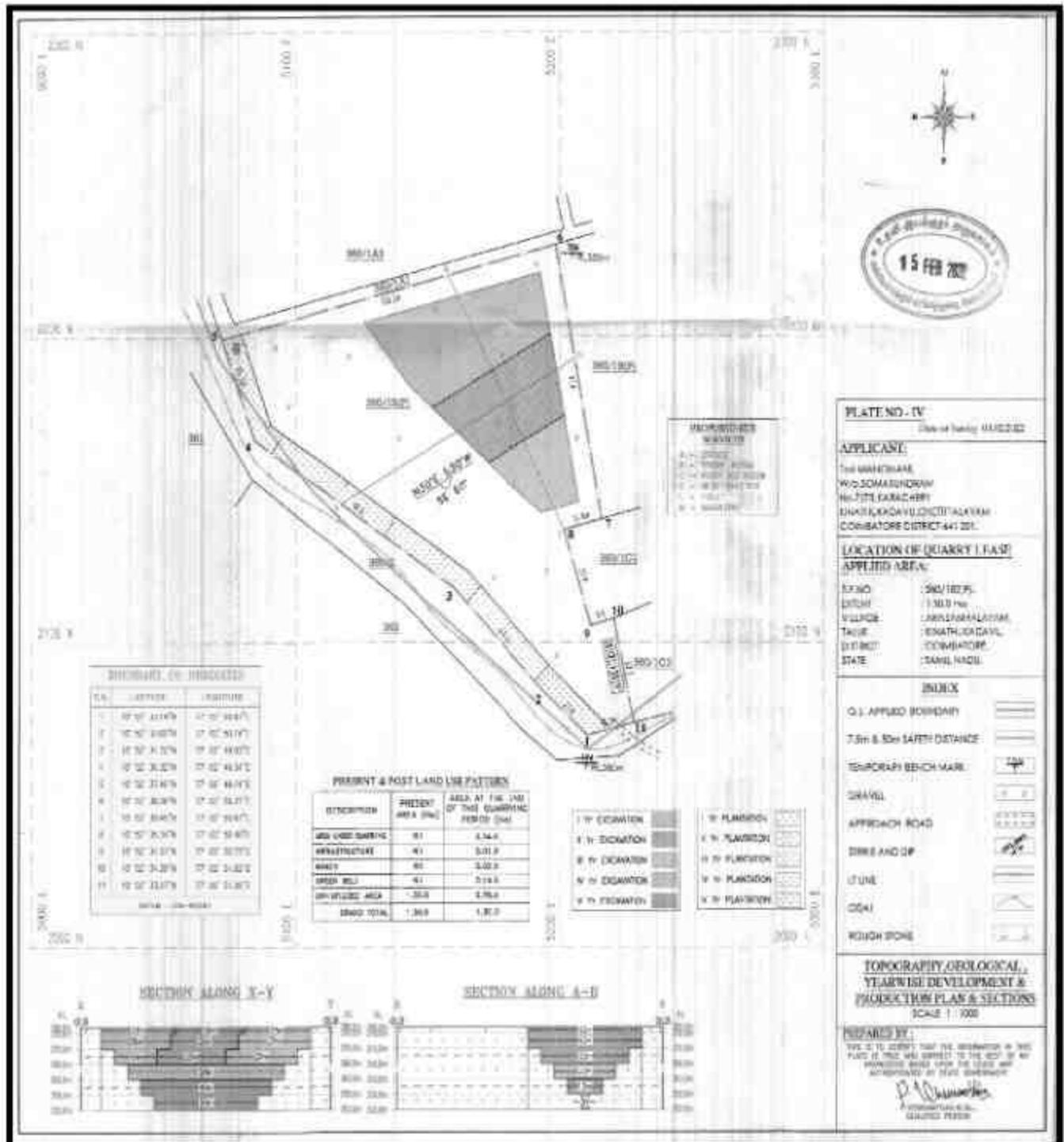


FIGURE 2.11: TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT PRODUCTION PLAN AND SECTION



2.4 Resources and Reserves of the Cluster quarries

The available mineable reserves are calculated after leaving necessary safety distances, reduced depth considering bench width.

TABLE 2.6: ROUGH STONE PRODUCTION FROM THE PROPOSAL

Quarry	Production for five-year plan period considering safety parameters	YEARWISE Reserves	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	38925	I	8,230	26	2 Trips /Day
		II	9,880		
		III	10,260		
		IV	6,785		
		V	3770		

TABLE 2.7: GRAVEL PRODUCTION FROM THE PROPOSAL

Quarry	Mineable Reserves in m ³	YEARWISE Reserves	Per Year Production in m ³	Per Day in m ³	Number of Lorry Load @ 12m ³ per load
P1	6,794	I	2,408	8	1 load per week
		II	2,236		
		III	2,150		
		IV	-		
		V	-		

Source: Approved Mining Plan

Disposal of Waste

In the entire cluster quarries no waste is anticipated, quarried out materials (Rough stone and Gravel) will be utilized (100%).

2.5 Method of Mining

The method of mining is common for all the proposed projects. The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The top layer of overburden (Gravel) will be Excavate directly by Hydraulic Excavators and loaded into tippers directly and sold to needy customers. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting.

Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

2.5.1 Drilling

Drilling will be carried out as per parameters given below:-

Spacing – 1.2m, Burden – 1.0, Depth of hole - 1.5m

2.5.2 Blasting

Blasting will be done as per details below:-

- Controlled blasting parameter:-

Spacing – 1.2m

Burden – 1.0 m

Depth of hole – 1.5 m

Charge per hole – 0.5Kg

Powder factor – 10 tonnes/kg

Dia of hole – 32 mm

Details of blasting design and parameters are discussed in approved mining plan.

No of Holes to be drilled per day:-

Volume of Rough Stone will be excavated from
one Kg of explosive

= 6 Tonnes

Total Volume from one proposed quarries

= 38,925 m³

= 38,925/5

= 7,785/300

= 26* 2.6

= 67.6 Tonnes per day

Therefore, Number of Holes per day:

= 67.6 /6

= 11 Holes per day (for 1 Quarries)

Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator & Detonating Fuse

2.5.3 Extent of Mechanization

TABLE 2.8 PROPOSED MACHINERY DEPLOYMENT

PROPOSAL – P1				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	2	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker	1	300 HP	Diesel Drive
4	Trucks	1	20 Tonnes	Diesel Drive

Source: Approved Mining Plan of the respective projects.

2.6 General Features

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities are available in the Existing quarries and the same infrastructure as per the Mine Rule will be arranged after the grant of quarry lease in the proposed quarries.

2.6.1 Drainage Pattern

The general drainage pattern of the area is dendritic. There are no streams, canals or water bodies crossing within the project area, hence there is no requirement of stream or canals diversion in the near future.

2.6.2 Traffic Density

Traffic density measurements were performed as per IRC 1960 Guidelines at three locations based on the transportation route. The monitoring was carried out on 21-04-2021. Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two-three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Route – 1.

25 feet hasphalt road is mainly utilized for transportation of materials (total length of the road 2.5 km), all the quarries having separate/ common approach road to connect this road way. This road again connecting in the Thenkasi – Karacheri village road (30 feet).

Route – 2.

Village road is located south side of the cluster site, this road connecting near the karacheri – Thenkasi road near Karacheri village junction road at a distance of 1.5 km.

TABLE 2.9 – TRAFFIC SURVEY LOCATION'S

Station code	Station location	Distance and Direction	Type of Road
TS1	Arasampalayam Village Road	2.5km- west	Village road
TS2	Vadasithur – Chettipalayam Road	1.0Km-SE	Major District Road

Source: On-site monitoring by GEMS FAE & TM

FIGURE 2.12: TRAFFIC SURVEY LOCATIONS & TRANSPORTATION ROUTE MAP

(Source: Survey of India Toposheet)

TABLE 2.10 – EXISTING TRAFFIC VOLUME

Station code	HMV (Hourly Average)		LMV hourly average		2/3 Hourly average		Total PCU per hour
	No	PCU	No	PCU	No	PCU	
TS1	24	72	12	12	38	19	103
TS2	102	306	143	143	114	57	506

Source: On-site monitoring by GEMS FAE & TM

- PCU conversion factor for HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 0.5 for Motor Vehicles (2/3 Wheelers)

TABLE 2.11 – ANTICIPATED TRAFFIC DUE TO THIS PROPOSED PROJECT

Transportation of Rough stone per day		
Capacity of trucks	Cumulative Trips	Volume in PCU
10/20 tonnes	40 per day (26 Trips of Rough stone and 14 Trips of Gravel) ie., 5 Tippers per hour	120

Source: Anticipated based on Approved Mining Plan Production

TABLE 2.12 – SUMMARY OF TRAFFIC VOLUME

Route	Existing traffic value in PCU	Incremental traffic from the quarry in PCU	Total traffic volume	Hourly Capacity in PCU as per IRC guidelines
Village road	103	120	223	500
Major District Road	506	120	626	1200

Source: On-site monitoring analysis summary by GEMS FAE & TM

Rough stone from the project site mainly will be supplied to the needy crushers located within the radius of 2 km from the project site.

- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not allow during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

As per the IRC 1960 this existing road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour hence there will not be any conjunction due to this transportation.

2.6.3 Mineral Beneficiation and Processing

There is no mineral beneficiation processing or ore beneficiation in this project within the lease area.

2.6.4 Existing Infrastructure

The project area is new and Existing quarries for the existing quarries infrastructures are already available within the project area. The infrastructural facilities to be made after the start of the quarrying operations will be prepared outside limit as per the rules and safe distance to be adopted.

2.6.2 Drainage Pattern

The drainage pattern of the area is dendritic – sub dendritic.

2.7 Project Requirement

2.7.1 Water Source & Requirement

Detail of Total water requirements in KLD as given below:

TABLE 2.13 – WATER REQUIREMENT FOR THE INDIVIDUAL PROJECT

*Purpose	Quantity	Source
Dust Suppression	0.3 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Green Belt development	0.5 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Domestic purpose	0.4 KLD	Water Tankers.
Total	1.2 KLD	

Source: Prefeasibility Report

For the water conservation point of view about 50% water will be required for the suspension of the dust. Water shall be obtained from accumulated rainwater/seepage water in quarry pits. Packaged Drinking Water is available from the nearby approved water vendors.

2.7.2 Power and Other Infrastructure Requirement

The project's does not require power supply for the quarry operation. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB. For the quarrying operation like compressor for drilling Diesel will be utilized.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., will be constructed within the project area before commencing the quarry operation. No workshops are proposed inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment.

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations:

Total Quantity of diesel consumption for the 1 proposals = 300 Litres per day

2.7.4 Employment Requirement:

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community.

TABLE 2.14: EMPLOYMENT POTENTIAL FOR PROPOSED QUARRIES

PROPOSAL	
Mines Manager/Mines Foreman	1
Mate/Blaster	1
Jack hammer operator	4
Excavator Operator & Drivers	2
Watchman/Security	1
Labour Helper	2
Co-Operator and Cleaner	3
Total	14

A total of 14 people will get employment due to these proposal quarries.

2.7.5 Project Cost

TABLE 2.15 – PROJECT COST OF PROPOSED PROJECT

Project Cost	Rs.28,29,000/-
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Source: Approved Mining Plan & Prefeasibility Report of the respective projects

2.8 Project Implementation Schedule

The commercial operation will commence after the grant of Environmental Clearance. CTO will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the Environmental Clearance will be compiled before the start of mining operation.

TABLE 2.16 – EXPECTED TIME SCHEDULE FOR THE PROPOSED QUARRIES

S. No	Particulars lease execution	Time schedule (in month)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to operate						Production start period

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines

CHAPTER – 3: DESCRIPTION OF ENVIRONMENT

3.0 General

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions.

As per the MoEF & CC Office Memorandum F. No IA3-22/10/2022.IA.III (E 177258) Dated 8th June, 2022 the baseline data is utilized for this proposal.

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March, April & May 2021 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries by Enviro-Tech Services – An ISO 9001: 2015, 14001: 2015 & 45001:2015 Certified & MoEF Recognised Laboratory, accredited by ISO/IEC-17025:2017 (NABL) & UPPCB Certified & MoEF Notified Laboratory, for the below attributes-

- Land
- Water
- Air
- Noise
- Biological
- Socio-economic status

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster quarries against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz **core zone** and **buffer zone** where core zone is considered as cluster and buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

Study Period

The baseline study was conducted during the post-monsoon season i.e. March 2021 – May 2021.

Study Methodology

Baseline data's was generated for various environmental parameters including Land, Soil, Water (surface and groundwater), Air, Noise, Ecology & Biodiversity and Socio-economic status to determine the quality of the prevailing environmental settings. An MoEF accredited Laboratory was used for generating the baseline data.

1. The project area (Core zone) was surveyed in detail with the help of Total Station survey instrument and the boundary pillars were picked up with the help of handheld GPS. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO).
2. Soil samples were collected and analysed for relevant physico-chemical characteristics, exchangeable cations, nutrients & micro nutrients etc., in order to assess the impact of mining activities and proposed greenbelt development
3. Ground water samples were collected during the study period from the open wells and bore wells, while surface water was collected from river and lake in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed quarries.

4. A meteorological station was setup in pachapalayam village. Wind speed, Wind direction, Dry and wet bulb temperature, Relative humidity, Rainfall with cloud cover and general weather conditions were recorded throughout the study period.
5. In order to assess the Ambient Air Quality (AAQ), samples of Ambient Air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, NO_x with gaseous attachments & Fine Dust Samplers (FDS) for PM_{2.5} and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality
6. The noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone
7. Baseline Ecology and Biodiversity studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area
8. Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

TABLE 3.1 – ENVIRONMENTAL MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

ATTRIBUTE	PARAMETERS	FREQUENCY OF MONITORING	NO. OF LOCATIONS	PROTOCOL
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
Soil	Physio - Chemical Characteristics	Once during the study period	8 (4 core & 4 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
Water quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	7 (1 surface water & 6 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ , NO _x CO Fugitive Dust	24 hourly twice a week (March 2021 – May 2021)	10 (4 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	10 (4 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrante & Transect Study & Secondary Data
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

* All monitoring and testing are been carried out as per the Guidelines of CPCB and MoEF & CC.

3.1 Land Environment

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the cluster site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 Study of Land Use/ Land Cover

Indian Remote Sensing satellite IRS-P6, LISS III of Bhuvan (ISRO), multi-spectral digital data has been used for the preparation of land use/ land cover map of present study.

A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping.

An image interpretation keys were developed based on such image characteristics, which enable interpretation of satellite images for land use/land cover features. Further, the land use / land cover and other baseline layers was put in GIS database for integration, analysis, statistics generation and final out in the form of land use land cover map.

Interpreted thematic details were transferred on the base map. Besides, other supporting data like project reports and statistical data published by various Government departments have also been used.

TABLE 3.2 – LAND USE / LAND COVER TABLE 10 KM RADIUS

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	URBAN	728.08	1.96
2	RURAL	1138.75	3.06
3	MINING	587.02	1.58
AGRICULTURAL LAND			
4	CROP LAND	17360.11	46.62
5	PLANTATION	6276.64	16.85
6	FALLOW LAND	10031.47	26.94
BARREN/WASTE LANDS			
7	SCRUB LAND	1055.70	2.83
WETLANDS/ WATER BODIES			
8	WATER BODIES/LAKE	61.82	0.17
TOTAL		37239.59	100.00

FIGURE 3.1: LAND USE LAND COVER MAP 10KM RADIUS

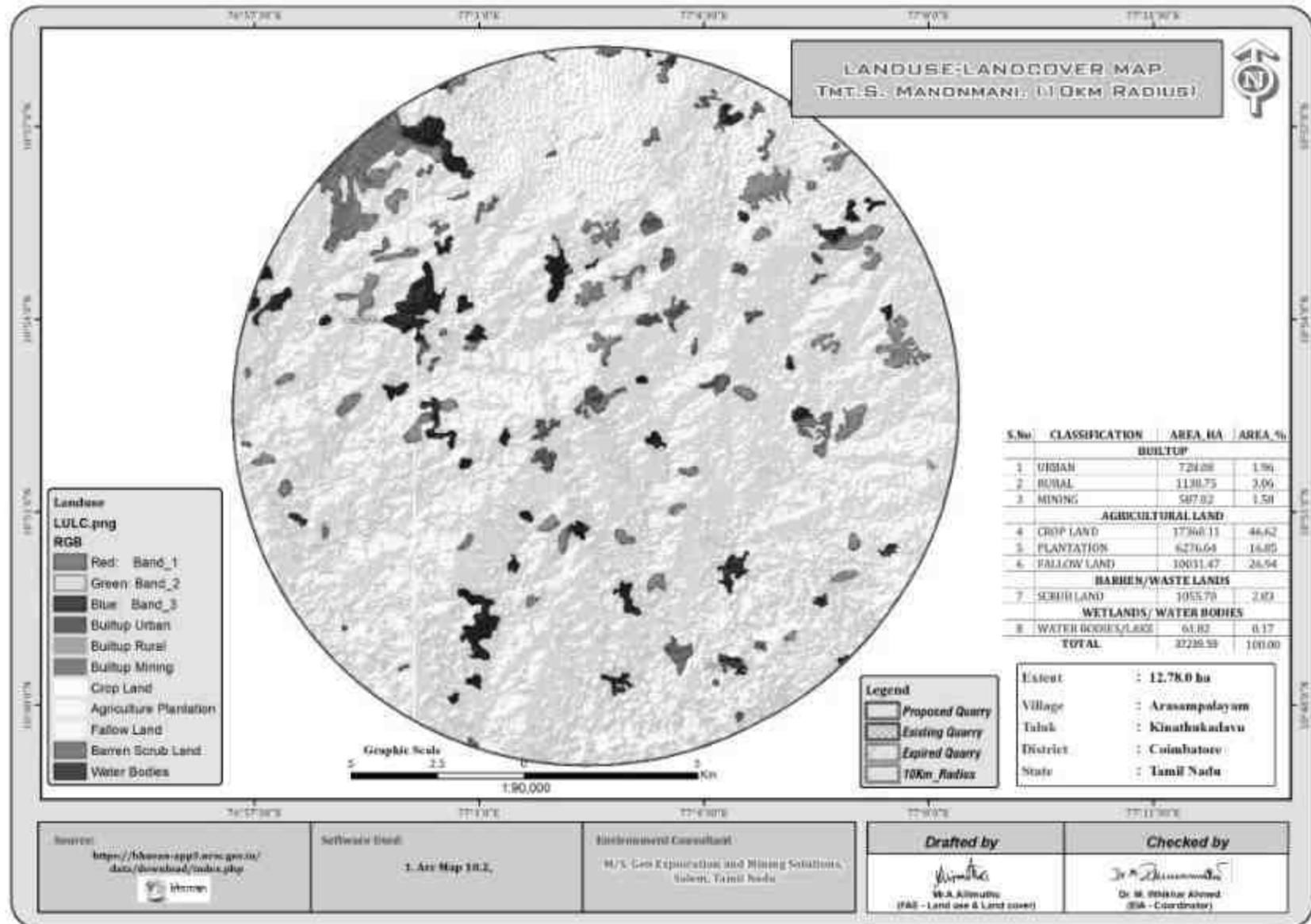
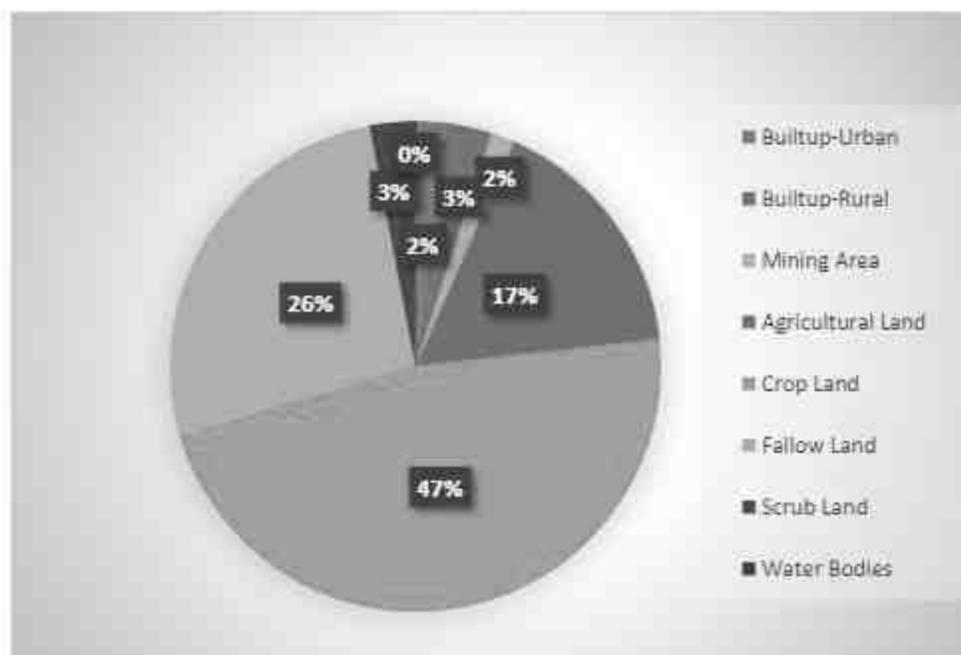


FIGURE 3.2: LAND USE AND LAND COVER CHART

Source: Table 3.2

Interpretation:

Built-up area	=	1843.884 ha ie.,	4.99 %
Agriculture land	=	33281.63 ha ie.,	90.2 %
Barren land	=	1050.37 ha ie.,	2.85%
Mining area	=	583.13ha ie.,	1.58 %

Cluster of quarries within 500m radius is 56.49.52 ha ie., 9.68 % of the total Mining areas within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

The cluster areas are almost plain terrain with gentle gradient towards Southeast – Southwestern side, maximum elevation of the area is 380m above AMSL. There are no hilly regions in and around the area.

3.1.3 Drainage Pattern of the Area

There are no developed surface drainage channels in the study area. Noyyal, a non-perennial pass 12.0km-North from the project site. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The area is mostly dry in all seasons except rainy seasons.

The general drainage pattern of the area is of sub dendritic and dendritic pattern. No prominent water course or nallah is inferred. During rainy season the surface runoff flows in W to E direction. The drainage pattern of the study area is given in Fig. 3.5. The quarrying activity will not hinder the natural flow of rainwater.

3.1.2 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within the study area. No Protected and Reserved Forest area is involved in the project area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the mine lease area i.e. 10 km radius of the mine lease area, are given in the below Table 3.3.

3.1.5 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

TABLE 3.3 – DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE PROJECT AREA

Sl. No	Sensitive Ecological Features	Name	Arial Distance in km from Mine Lease Boundary
1	National Park / Wild life Sanctuaries	None	Nil within 10 km Radius
2	Reserve Forest	None	Nil within 10 km radius
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10KM Radius
4	Critically Polluted Areas	None	Nil within 10KM Radius
5	Mangroves	None	Nil within 10KM Radius
6	Mountains/Hills	None	Nil within 10KM Radius
7	Notified Archaeological Sites	None	Nil within 10KM Radius
8	Defence Installation	None	Nil within 10KM Radius

Source: Survey of India Toposheet, Village Cadastral Map & Google Earth/Maps

TABLE 3.4 – WATER BODIES WITHIN THE CLUSTER FROM PROPOSED QUARRIES

Tmt. S. Manonmani -PI		
S.No	LABEL	DISTANCE & DIRECTION
1	Odai	50m Safety West
2	Tank Near Myleripalayam	850m NE
3	Tank Near Chettipalayam	2.5km SW
4	Kothavadi Lake	4.0km NW
5	Odai near Kothavadi	7.0km SE

Source: Village Cadastral Map and Field Survey

3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.5 and Figure 3.3.

TABLE 3.5 – SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Core Zone	Near Project Area 220m SE	10°52'40.49"N 77° 3'12.69"E
2	S-2	Core Zone	Near Project Area 150m South	10°52'51.81"N 77° 3'8.35"E
3	S-3	Core Zone	Near Project Area West	10°52'54.81"N 77° 2'42.92"E
4	S-4	Core Zone	Near Project Area West	10°52'36.37"N 77° 2'44.84"E
5	S-5	Malumichampatty	3.5km NW	10°54'14.16"N 77° 0'51.37"E
6	S-6	Chettipalayam	2.8km North	10°55'1.66"N 77° 2'52.62"E
7	S-7	Vadasithur	5km SE	10°50'23.00"N 77° 4'57.67"E
8	S-8	Ponnakkani	4.0km NE	10°53'30.03"N 77° 5'48.78"E

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

The objective of the soil sampling is -

1. To determine the baseline soil characteristics of the study area;
2. To determine the impact of proposed activity on soil characteristics and;

To determine the impact on soil more importantly agriculture production point of view.

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the proposed quarry site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Eight (8) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The sealed samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.5.

TABLE 3.6 – METHODOLOGY OF SAMPLING COLLECTION

Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory.

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classification of soil and physico-chemical characteristics of the soils are presented below in Table 3.6 & Test Results in Table 3.7.

FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

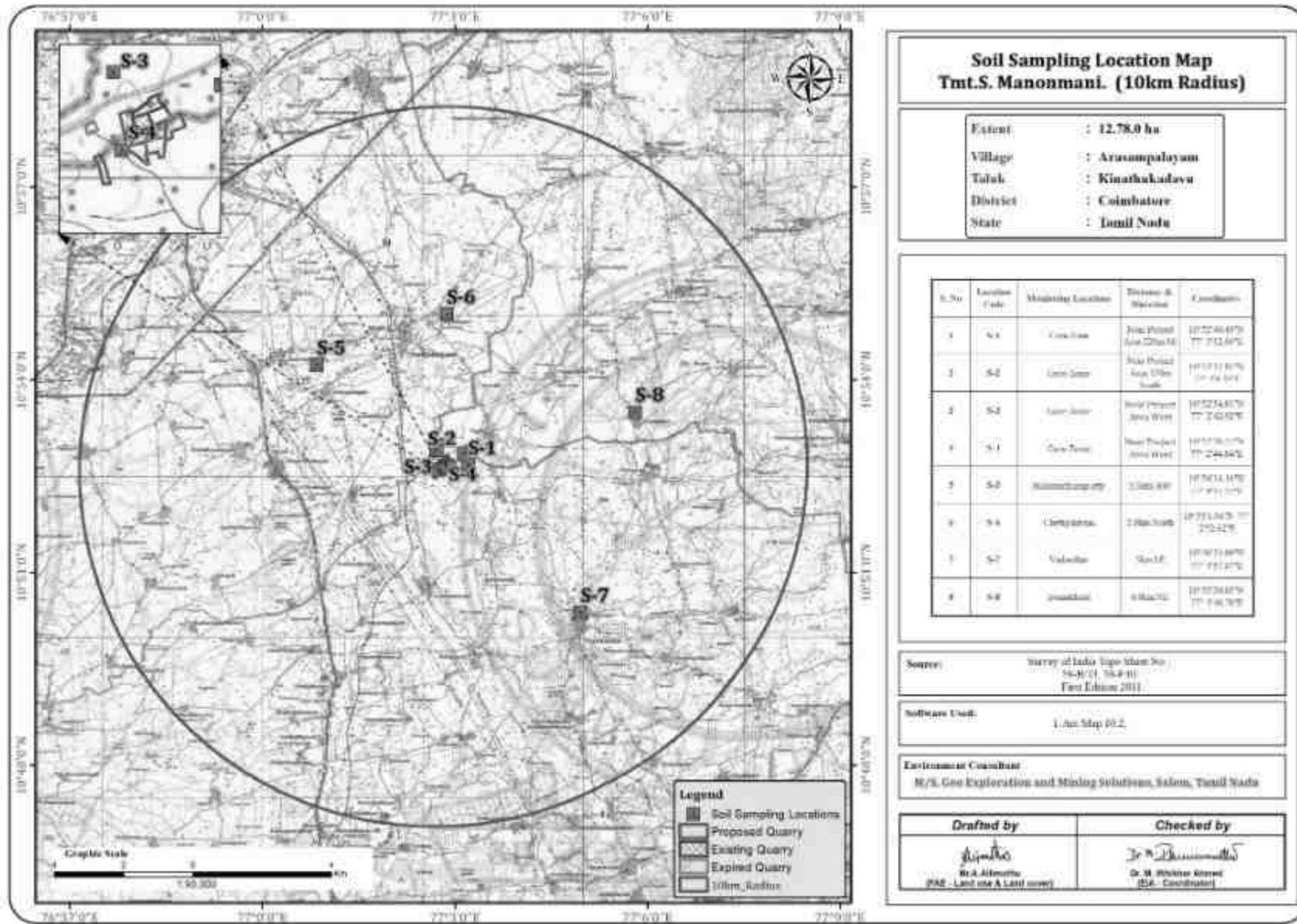


FIGURE 3.4: SOIL MAP

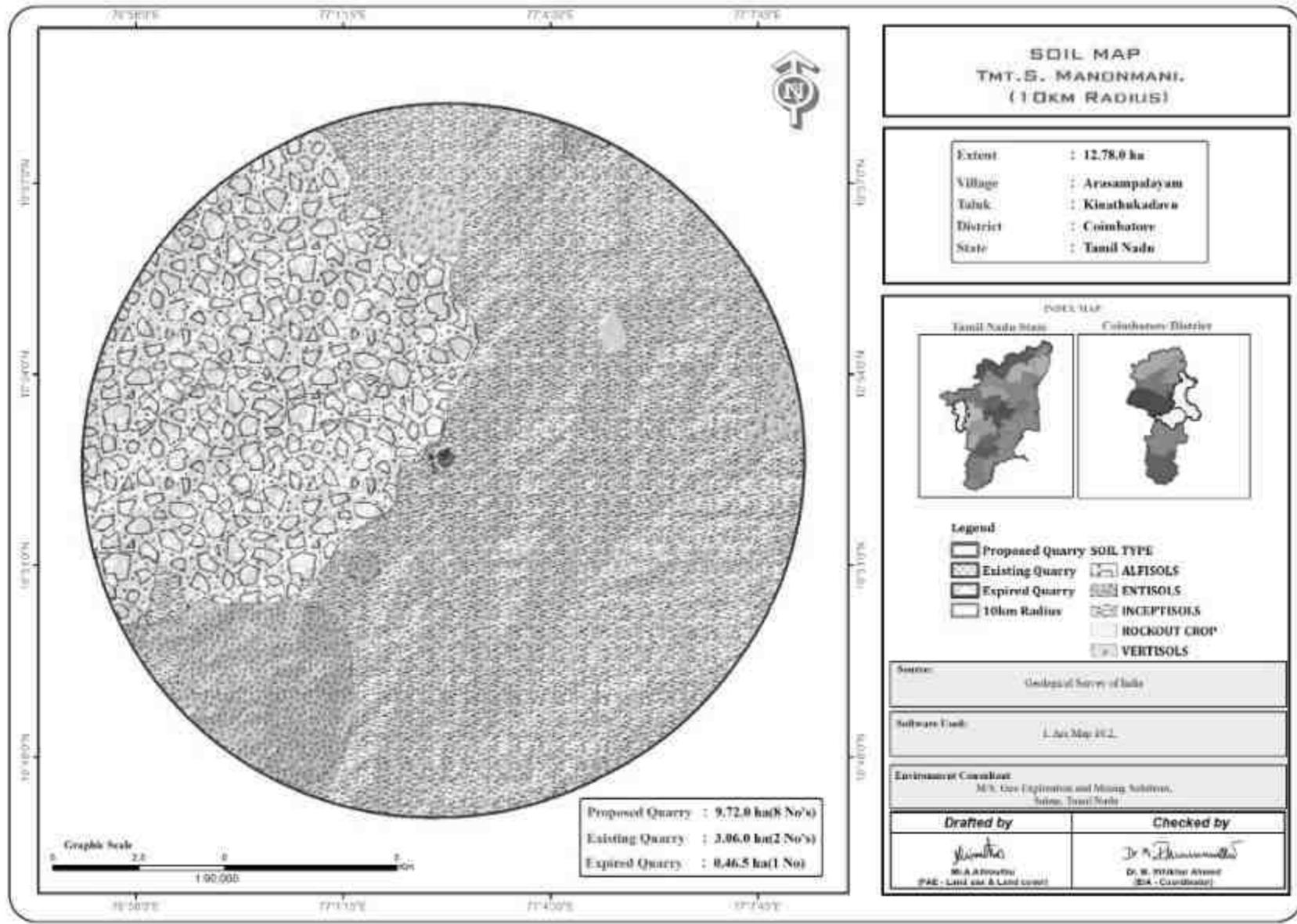


TABLE 3.7 – SOIL QUALITY MONITORING DATA

Parameter	Unit	S-1 Core Zone	S-2 Core Zone	S-3 Core Zone	S-4 Core Zone	S-5 Othakalmandapam	S-6 Chettipalayam	S-7 Vadasithur	S-8 ponnakkani	
1	pHat27C	-	7.39	7.55	8.23	7.95	7.88	7.81	7.53	7.83
2	Electrical Conductivity at 25°C	µs/cm	310	580	540	435	564	420	437	465
3	Texture	-	Clay Loam	Clay Loam	Clay	Clay Loam	Clay Loam	Clay Loam	Loam	Silt Clay Loam
4	Sand	%	34.9	35.5	24.1	36.8	38.0	41.2	45.1	61.2
5	Silt	%	36.6	34.1	34.3	27.9	33.0	31.6	38.7	14.3
6	Clay	%	28.5	30.4	41.6	35.3	29.0	27.2	16.2	24.5
7	Water Holding Capacity	%	46.7	47.3	51.5	42.1	40.6	46.1	42.5	44.3
8	Bulk Density	g/cc	0.79	1.04	0.94	1.10	0.83	1.01	0.92	1.10
9	Porosity	%	36.3	38.6	34.6	28.7	31.2	30.1	27.3	28.5
10	Exchangeable Calcium (as Ca)	mg/Kg	176.1	173.2	183	156	162	162.2	166	159
11	Exchangeable Magnesium (as Mg)	mg/Kg	24.6	30.1	35	31.5	30.7	24	23.8	22.4
12	Exchangeable Manganese (as Mn)	mg/Kg	29.6	36.5	40.2	34.3	37	28	24.6	25.5
13	Exchangeable Zinc as Zn	mg/Kg	0.47	0.77	1.14	0.89	0.65	0.90	0.81	0.93
14	Available Boron (as B)	mg/Kg	0.73	0.84	0.92	0.67	0.80	0.51	0.68	0.62
15	Soluble Chloride (as Cl)	mg/Kg	163.7	178.2	183	170	156.7	163	183	173
16	Soluble Sulphate (as S04)	mg/Kg	138	162	155.3	162.8	181.2	147	150	118
17	Available Potassium (as K)	mg/Kg	43.2	41.8	44.2	38.1	34.2	40.3	39.7	30
18	Available Phosphorous (as P)	Kg/hect	0.89	1.18	1.32	1.27	1.55	0.73	0.71	0.86
19	Available Nitrogen (as N)	Kg/hect	146.2	165.2	189	220	183.7	177	163	185
20	Cadmium (as Cd)	mg/Kg	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)
21	Chromium (as Cr)	mg/Kg	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
22	Copper (as Cu)	mg/Kg	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
23	Lead (as Pb)	mg/Kg	0.87	1.10	0.64	0.55	0.83	0.76	0.68	0.84
24	Total Iron	mg/Kg	2.26	2.18	2.40	2.53	2.34	2.16	2.69	1.76
25	Organic Matter	%	1.63	2.13	2.36	2.08	2.01	1.39	1.68	1.29
26	Organic Carbon	%	0.95	1.24	1.37	1.21	1.17	0.81	0.98	0.75
27	CEC	meq/100g	46.8	45.5	46.8	38.1	49	36.7	44.5	40.5

Source: Sampling Results by Enviro-Tech Services Laboratories

- This proposed mining activity is for rough stone and Gravel Quarry by opencast mechanized mining method involving occasional drilling & blasting activities on the weathered formation and removal of topsoil and preserving in safety barrier of the lease area to facilitate greenbelt development and winning of Rough stone by eco-friendly wire-saw cutting method.
- Dust generation due to this quarrying activity becomes air borne and gets carried away to surrounding areas which may retard the photosynthesis activities of plants and heavy metals naturally occur in soil, but additional pollution come from anthropogenic activities such as agriculture, urbanisation, industrialisation, and mining.
- The proposed rough stone project is a Charnockite formation which does not source to heavy metal contamination.
- This proposed mining is a small-scale activity and in order to mitigate the impact of mining around the proposed mine lease area on Soil Health and Biodiversity its proposed by ways of daily three times water sprinkling by own water tanker and water sprinkling arrangements and greenbelt development all along the mine lease boundary.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Soil Health and Biodiversity.

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay to Sandy Soil and Bulk Density of Soils in the study area varied between 0.79 – 1.10 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 42.1- 51.5% and 27.3 - 38.6%

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 7.39 to 8.23
- The available Nitrogen content range between 146.2 to 220 kg/ha
- The available Phosphorus content range between 0.71 to 1.55 kg/ha
- The available Potassium range between 30.0 to 44.2 mg/kg

Whereas, the micronutrient as zinc (Zn), iron (Fe) and copper (Cu) were found in the range of 0.47 to 1.14 mg/kg, 1.76 to 2.69 mg/kg and ND

Wilting co efficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

3.2 Water Environment

The water resources; both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water Resources:

Noyyal river lies at 12.0 Km North from the project cluster. The buffer area is studded with few tanks that serve as the source for agriculture and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

3.2.2 Ground Water Resources:

The terrain is underlain by hard rock formations, Fissured and fractured crystalline rocks constitute the important aquifer systems in the Coimbatore region. Ground water occurs under phreatic to semi-confined conditions in these formations and is being developed by means of dug wells and filter points. Proterozoic formation

is the basement rocks which consist of quartzite, crystalline limestone, calc-granulite, hornblende – biotite gneiss, charnockite or pyroxene granulite, granite and pegmatite. Weathered, a fissured crack, shear zones and joints in the basement rock act as a good groundwater potential zone in the study area.

The study area falls in the Sular block which is categorized as over-exploited zone as per G.O (MS) No 113 dated 09.06.2016.

3.2.3 Methodology

Reconnaissance survey was undertaken to collect the sampling and locations were finalized based on;

1. Drainage pattern;
2. Location of residential areas representing different activities likely impact areas; and
3. Likely areas, which can represent baseline conditions

One (1) surface water and Six (6) ground water samples were collected in the study area and physico-chemical, heavy metals and bacteriological parameters were analysed. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Waste water' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

TABLE 3.8 – WATER SAMPLING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction from the cluster	Coordinates
1	SW-1	Gurunallipalayam Tank	6.5km South	10°48'45.42"N 77° 3'57.80"E
2	WW-1	Core Zone	740m SE	10°52'43.60"N 77° 3'30.85"E
3	WW-2	Core Zone	Near Project Area West	10°52'39.93"N 77° 2'44.00"E
4	WW-3	Vadasithur	5km SE	10°50'26.55"N 77° 5'0.80"E
5	BW-1	Core Zone	Near Project Area 420m SE	10°52'43.50"N 77° 3'20.52"E
6	BW-2	Core Zone	Near Project Area 170m NE	10°53'5.48"N 77° 2'53.42"E
7	BW-3	Chettipalayam	3km North	10°55'5.10"N 77° 2'50.87"E

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

Note: SW- Surface water, WW – Well Water, BW – Bore well

FIGURE 3.5: SITE PHOTOGRAPHS OF WATER SAMPLING LOCATIONS



TABLE 3.9 – SURFACE WATER ANALYSIS RESULTS

S.NO	Parameter	UNIT	SW1 Gurunallipalayam Tank
1	Color	Hazen	10
2	Odour	-	Agreeable
3	pH@ 25°C	-	7.79
4	Electrical Conductivity @ 25°C	us/cm	865
5	Turbidity	NTU	7.1
6	Total Dissolved Solids	mg/l	510
7	Total Hardness as CaCO ₃	mg/l	170.04
8	Calcium as Ca	mg/l	34.7
9	Magnesium as Mg	mg/l	20.3
10	Total Alkalinity as CaCO ₃	mg/l	211
11	Chloride as Cl ⁻	mg/l	134.2
12	Sulphate as SO ₄ ²⁻	mg/l	18.5
13	Iron as Fe	mg/l	0.16
14	Free Residual Chlorine	mg/l	BDL (DL: 2.0)
15	Fluoride as F ⁻	mg/l	0.16
16	Nitrates as NO ₃ ⁻	mg/l	12.4
17	Copper as Cu	mg/l	BDL (DL:0.2)
18	Manganese as Mn	mg/l	BDL (DL:0.05)
19	Mercury as Hg	mg/l	(BDL (DL: 0.0005)
20	Cadmium as Cd	mg/l	BDL (DL:0.01)
21	Selenium as Se	mg/l	BDL (DL: 0.05)
22	Aluminium as Al	mg/l	BDL (DL:0.03)
23	Lead as Pb	mg/l	BDL (DL:0.01)
24	Zinc as Zn	mg/l	BDL (DL:0.02)
25	Total Chromium	mg/l	BDL (DL: 0.05)
26	Boron as B	mg/l	BDL (DL:0.1)
27	Mineral Oil	mg/l	BDL (DL:1.0)
28	Phenolic Compunds as	mg/l	Absent
29	Anionic Detergents as	mg/l	BDL (DL:0.1)
30	Cynaide as CN ⁻	mg/l	Absent
31	Biological Oxygen	mg/l	8.4
32	Chemical Oxygen	mg/l	27
33	Dissolved Oxygen	mg/l	5.1
34	Total Coliform	Per 100ml	present
35	E-Coli	Per 100ml	present
36	Barium as Ba	mg/l	BDL (DL:0.5)
37	Ammonia-n (as Total	mg/l	3.3
38	Sulphide as H ₂ S	mg/l	BDL (DL:0.05)
39	Molybdenum as Mo	mg/l	BDL (DL:0.5)
40	Total Arsenic as As	mg/l	BDL (DL:0.01)
41	Total Suspended Solids	mg/l	16

TABLE 3.10 – GROUND WATER ANALYSIS RESULTS

S.NO	Parameter	Unit	WW2 Core Zone	WW3 Core Zone	WW4 Vadanithur	BW5 Core Zone	BW6 Core Zone	BW7 Chettipalayam
1	Color	Hazen	<5	<5	<5	<5	<5	<5
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH@ 25°C	-	7.06	6.71	7.55	7.67	7.08	8.27
4	Electrical Conductivity	µs/cm	956	800	959	825	888	764
5	Turbidity	NTU	<1	<1	<1	<1	<1	<1
6	Total Dissolved Solids	mg/l	564	472	566	486	524	451
7	Total Hardness as CaCO ₃	mg/l	180.52	143.1	189.59	132.84	201.95	103.6
8	Calcium as Ca	mg/l	36.1	29.7	33.8	22.1	38.1	20.3
9	Magnesium as Mg	mg/l	22	16.8	25.6	18.9	26	12.9
10	Total Alkalinity	mg/l	173	144	186.1	160	157.3	146
11	Chloride as Cl	mg/l	200	179	210	165.2	176	162
12	Sulphate as SO ₄	mg/l	20.7	15.1	19.2	17.1	19.4	11.8
13	Iron as Fe	mg/l	0.22	BDL(DL:0.1)	BDL(DL:0.1)	0.11	0.22	BDL(DL:0.1)
14	Free Residual Chlorine	mg/l	BDL(DL: 2.0)	BDL(DL: 2.0)	BDL(DL: 2.0)	BDL(DL: 2.0)	BDL(DL: 2.0)	BDL(DL: 2.0)
15	Fluoride as F	mg/l	0.17	0.21	0.15	0.61	0.16	0.20
16	Nitrates as NO ₃	mg/l	10.2	8.5	9.7	7.7	6.8	8.4
17	Copper as Cu	mg/l	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)
18	Manganese as Mn	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
19	Mercury as Hg	mg/l	(BDL (DL: 0.0005))	(BDL (DL: 0.0005))	(BDL (DL: 0.0005))	(BDL (DL: 0.0005))	(BDL (DL: 0.0005))	(BDL (DL: 0.0005))
20	Cadmium as Cd	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
21	Selenium as Se	mg/l	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)
22	Aluminium as Al	mg/l	BDL (DL: 0.03)	BDL (DL: 0.03)	BDL (DL: 0.03)	BDL (DL: 0.03)	BDL (DL: 0.03)	BDL (DL: 0.03)
23	Lead as Pb	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
24	Zinc as Zn	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
25	Total Chromium	mg/l	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)	BDL (DL: 0.05)
26	Boron as B	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
27	Mineral Oil	mg/l	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)
28	Phenolic Compounds	mg/l	Absent	Absent	Absent	Absent	Absent	Absent
29	Anionic Detergents	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
30	Cyanide as CN	mg/l	Absent	Absent	Absent	Absent	Absent	Absent
31	Total Coliform	Per 100ml	<2	<2	<2	<2	<2	<2
32	E-Coli	Per 100ml	<2	<2	<2	<2	<2	<2
33	Barium as Ba	mg/l	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)
34	Ammonia (as Total)	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
35	Sulphide as H ₂ S	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
36	Molybdenum as Mo	mg/l	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)
37	Total Arsenic as	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
38	Total Suspended Solids	mg/l	BDL(DL:2)	BDL(DL:2)	BDL(DL:2)	BDL(DL:2)	BDL(DL:2)	BDL(DL:2)

* IS: 10500:2012-Drinking Water Standards, # within the permissible limit as per the WHO Standard. The water can be used for drinking purpose in the absence of alternate sources. Note: SW- Surface water, GW - Ground water.

Source: Sampling Results by Enviro-Tech Services Laboratories

3.2.4 Interpretation & Conclusion

Surface Water

The pH of surface 7.79 while turbidity found within the standards. Total Dissolved Solids 510 mg/l and Chloride 134.2 mg/l. Nitrates 12.4 mg/l, while sulphates 18.5 mg/l.

Ground Water

The pH of the water samples collected ranged from 6.71 to 8.27 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. on Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 451 - 566 mg/l in all samples. The Total hardness varied between 103.6 – 201.95 mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

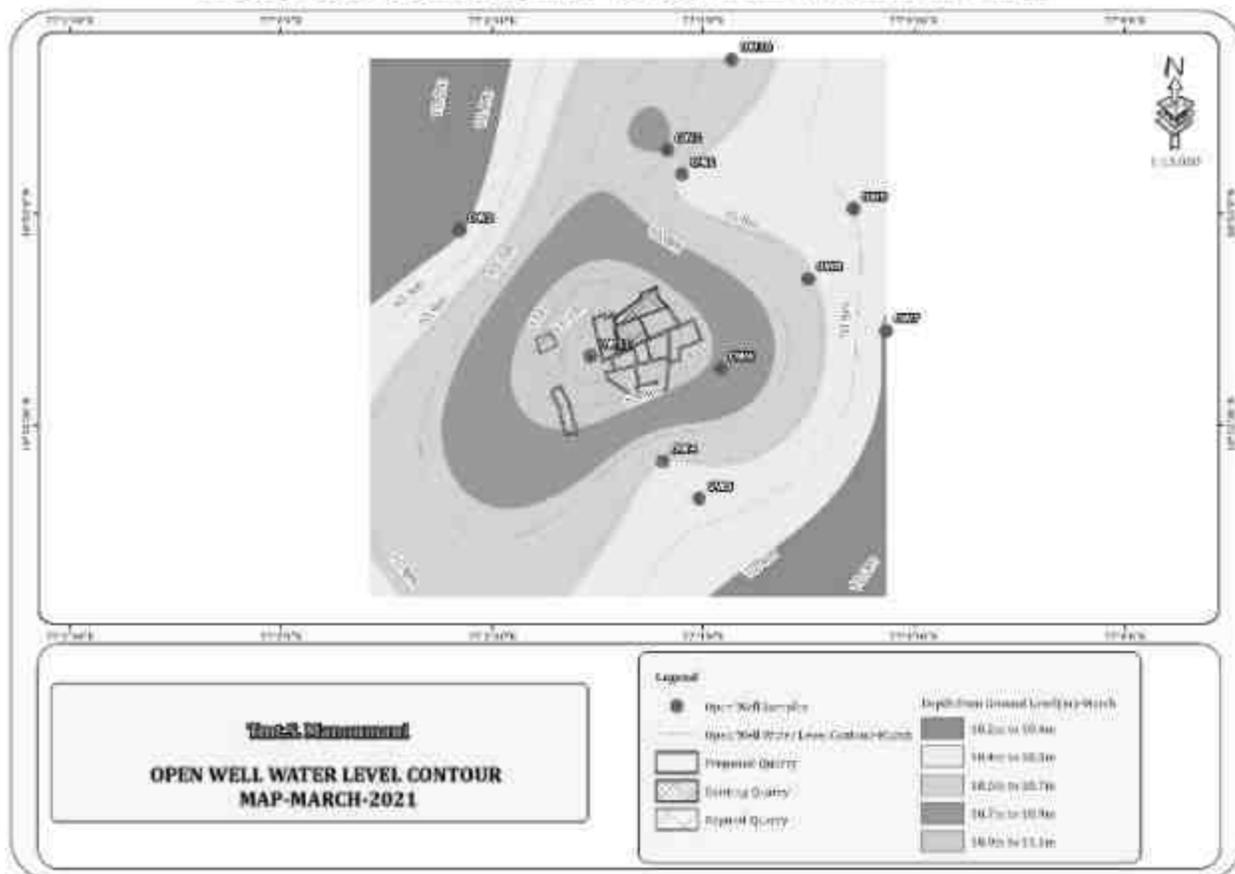
3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation Fissured and Fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 70 – 65 m. The Maximum depth of the quarrying operation in this proposal is 27 m hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to this upcoming project.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels this is due to the high intensity of fracture and weathered portion upto a depth of 10m thus the collected seepage water will be stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will be as a temporary reservoir in that area.

TABLE 3.11: PRE-MONSOON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MAR 2021	APR 2021	MAY 2021
1	OW1	10° 53' 05.5604" N	77° 02' 57.0360" E	10.5	11.75	11.8
2	OW2	10° 53' 09.0560" N	77° 02' 54.9529" E	10.8	12.05	12.1
3	OW3	10° 52' 57.6686" N	77° 02' 25.4435" E	10.4	11.65	11.7
4	OW4	10° 52' 24.7095" N	77° 02' 54.2879" E	10.56	11.81	11.86
5	OW5	10° 52' 19.4360" N	77° 02' 59.4862" E	10.54	11.79	11.84
6	OW6	10° 52' 37.8978" N	77° 03' 02.5422" E	10.9	12.15	12.2
7	OW7	10° 52' 43.3045" N	77° 03' 26.0845" E	10.4	11.65	11.7
8	OW8	10° 52' 50.6677" N	77° 03' 14.9749" E	10.6	11.85	11.9
9	OW9	10° 53' 00.6465" N	77° 03' 21.4299" E	10.5	11.75	11.8
10	OW10	10° 53' 21.9130" N	77° 03' 04.0943" E	10.69	11.94	11.99
11	OW11	10° 52' 39.6811" N	77° 02' 43.9872" E	11.2	12.45	12.5

FIGURE 3.6: CONTOUR MAP OF OPEN WELL WATER LEVEL

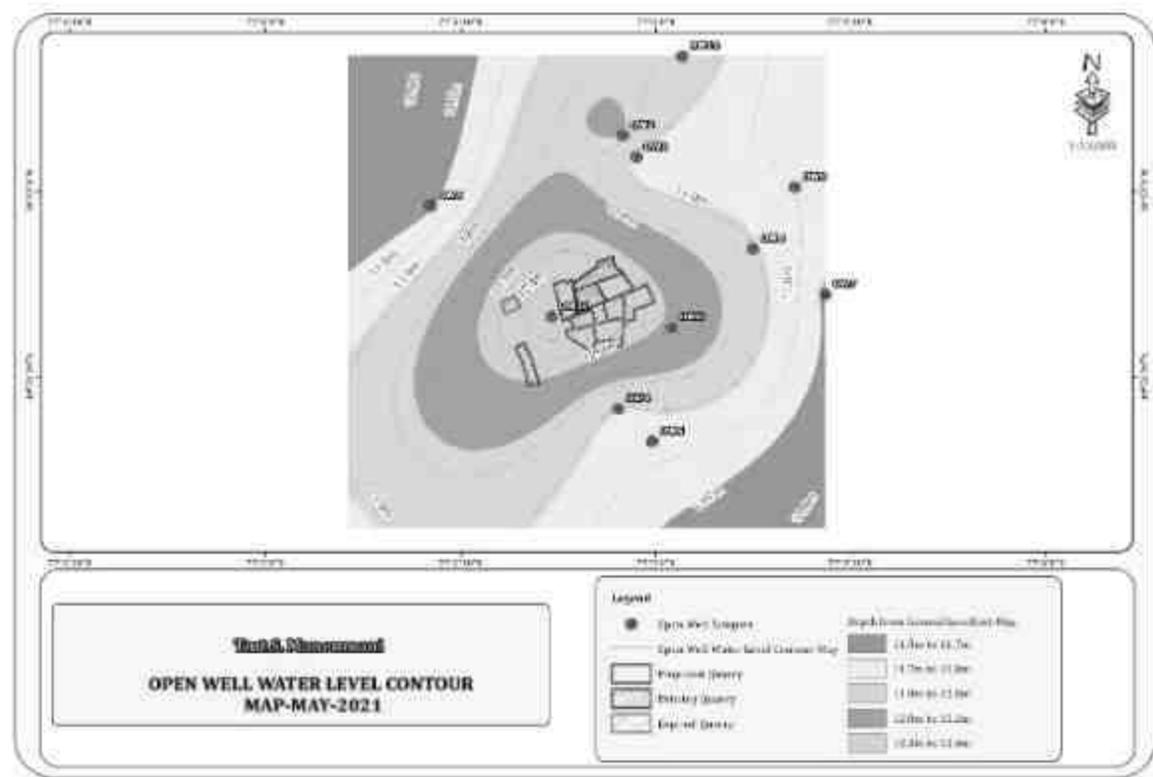
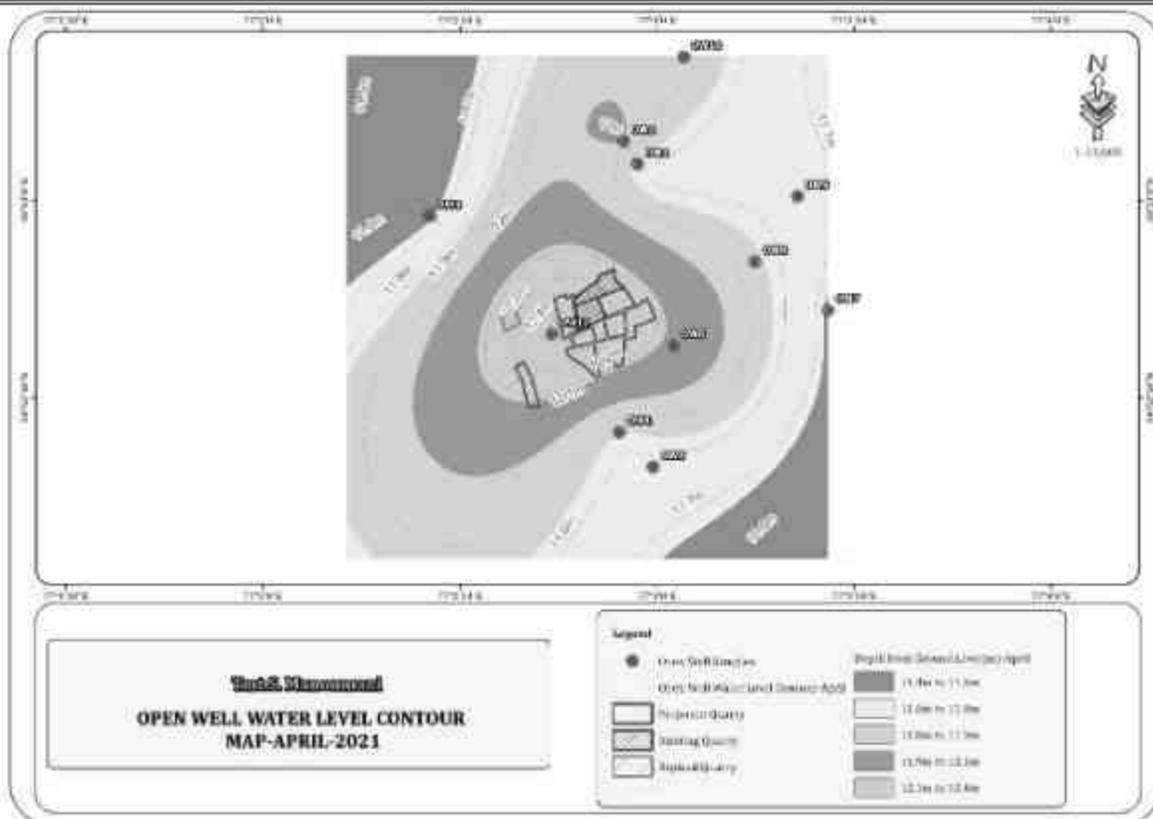
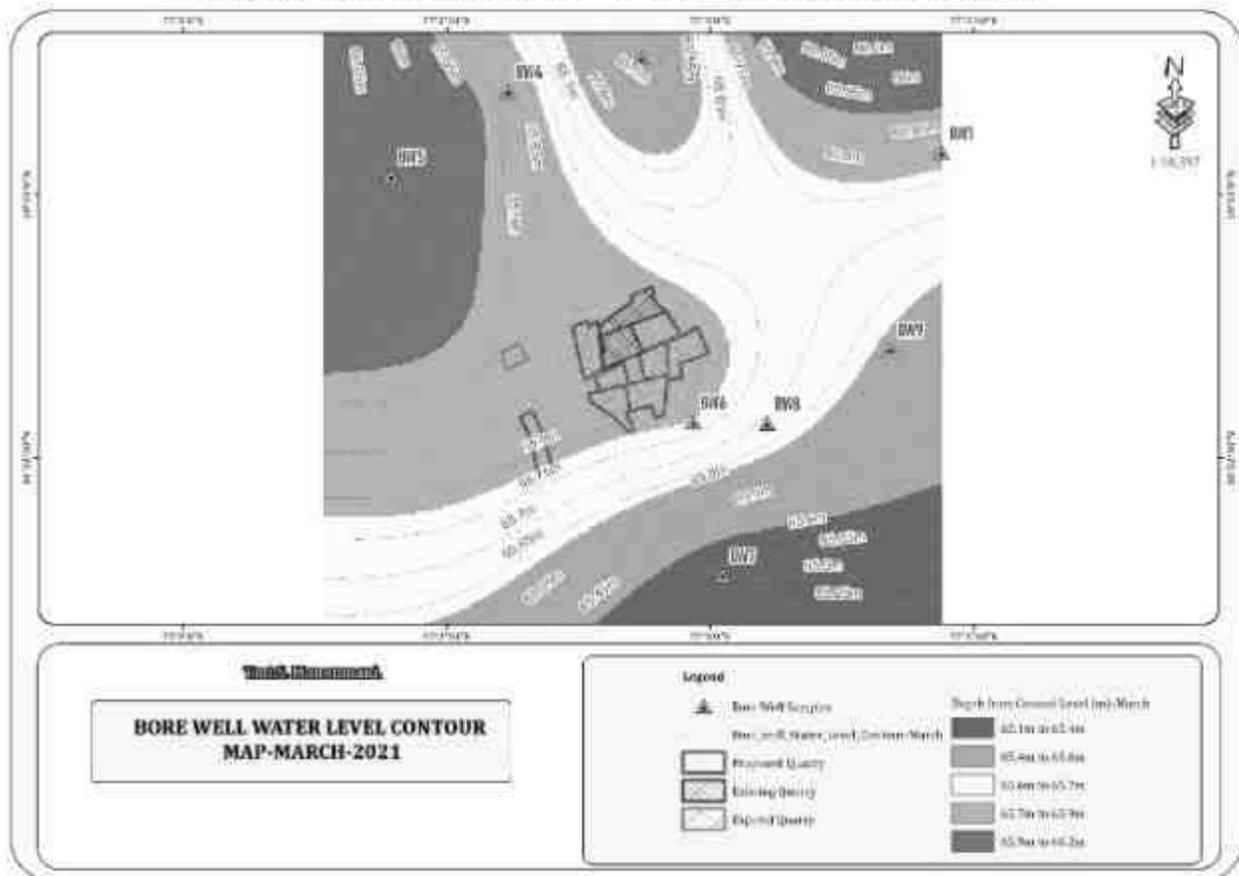


TABLE 3.12: PRE MONSOON WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MAR. 2021	APR. 2021	MAY. 2021
1	BW1	10° 53' 04.8433" N	77° 03' 26.3969" E	65.8	67	67.22
2	BW2	10° 53' 20.2460" N	77° 03' 10.0747" E	66.2	68	67.62
3	BW3	10° 53' 15.6145" N	77° 02' 52.2323" E	65.4	67	66.82
4	BW4	10° 53' 11.8112" N	77° 02' 37.0295" E	65.9	67	67.32
5	BW5	10° 53' 02.1711" N	77° 02' 23.6306" E	66	67	67.42
6	BW6	10° 52' 34.2182" N	77° 02' 58.0728" E	65.8	67	67.22
7	BW7	10° 52' 16.7547" N	77° 03' 01.4431" E	65.3	67	66.72
8	BW8	10° 52' 34.0318" N	77° 03' 06.4992" E	65.7	67	67.12
9	BW9	10° 52' 42.4633" N	77° 03' 20.5152" E	65.6	67	67.02

FIGURE 3.7: CONTOUR MAP OF BORE WELL WATER LEVEL

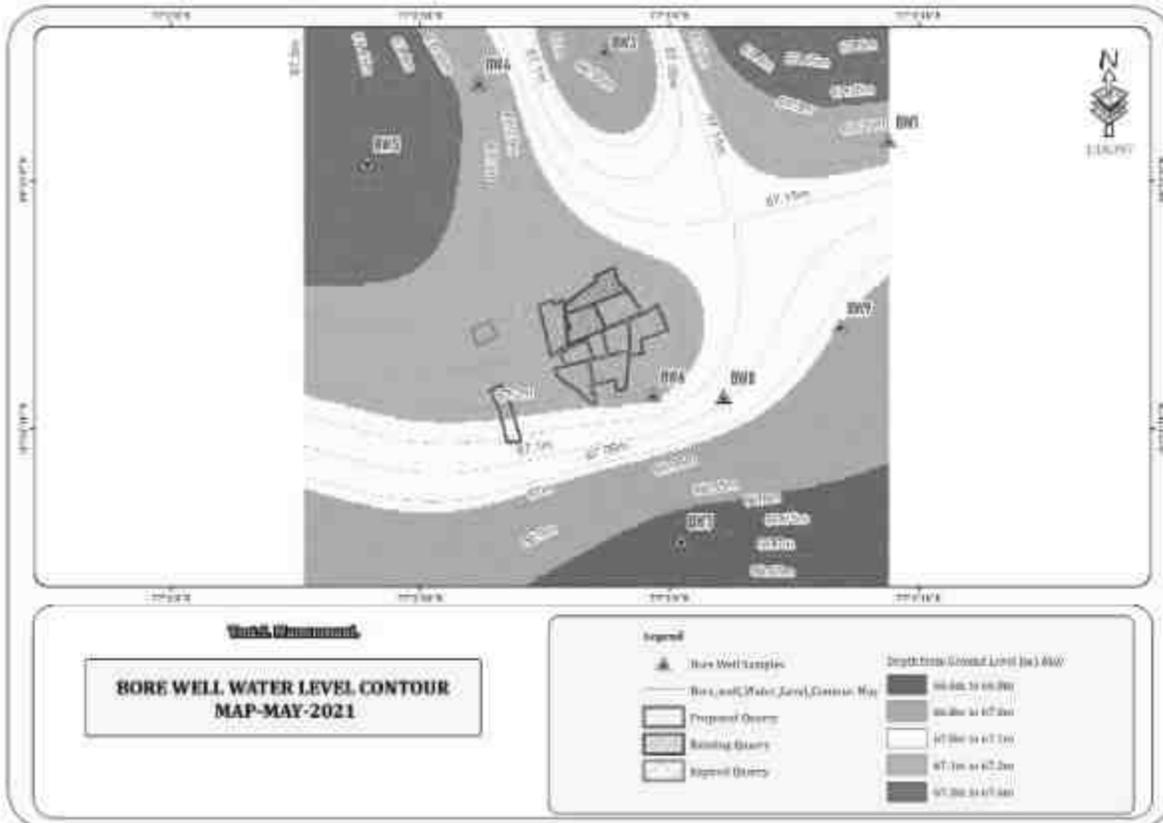
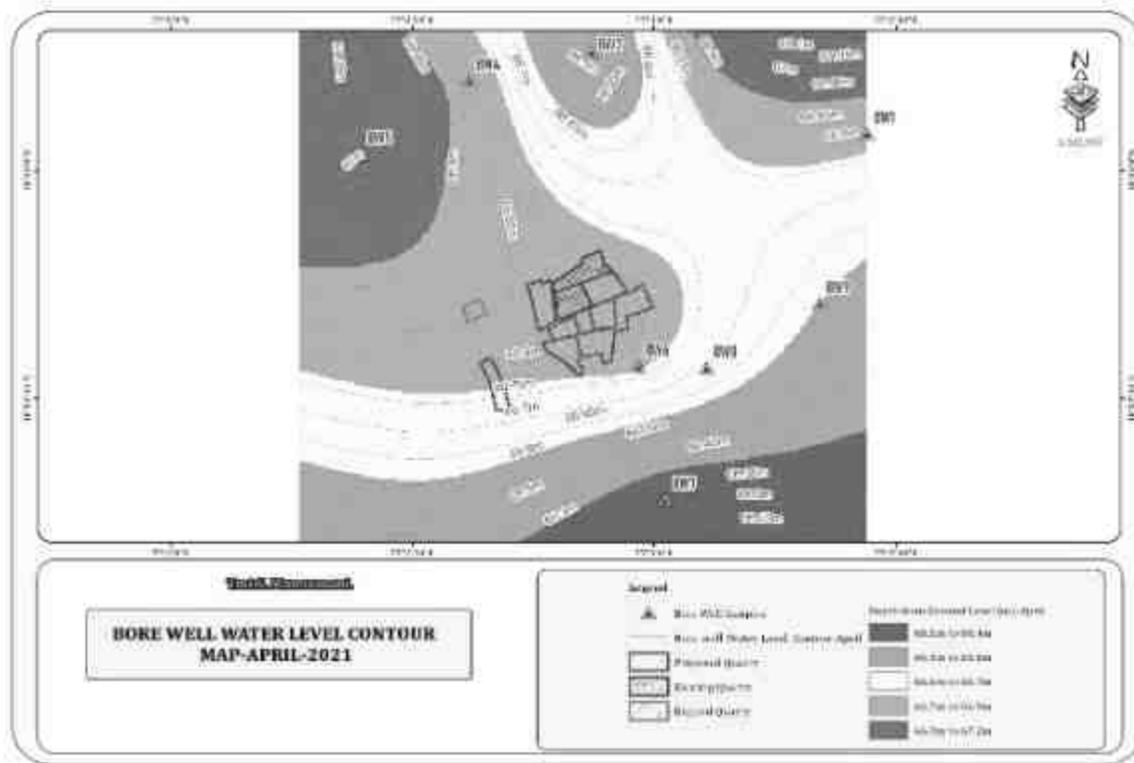


FIGURE 3.8: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

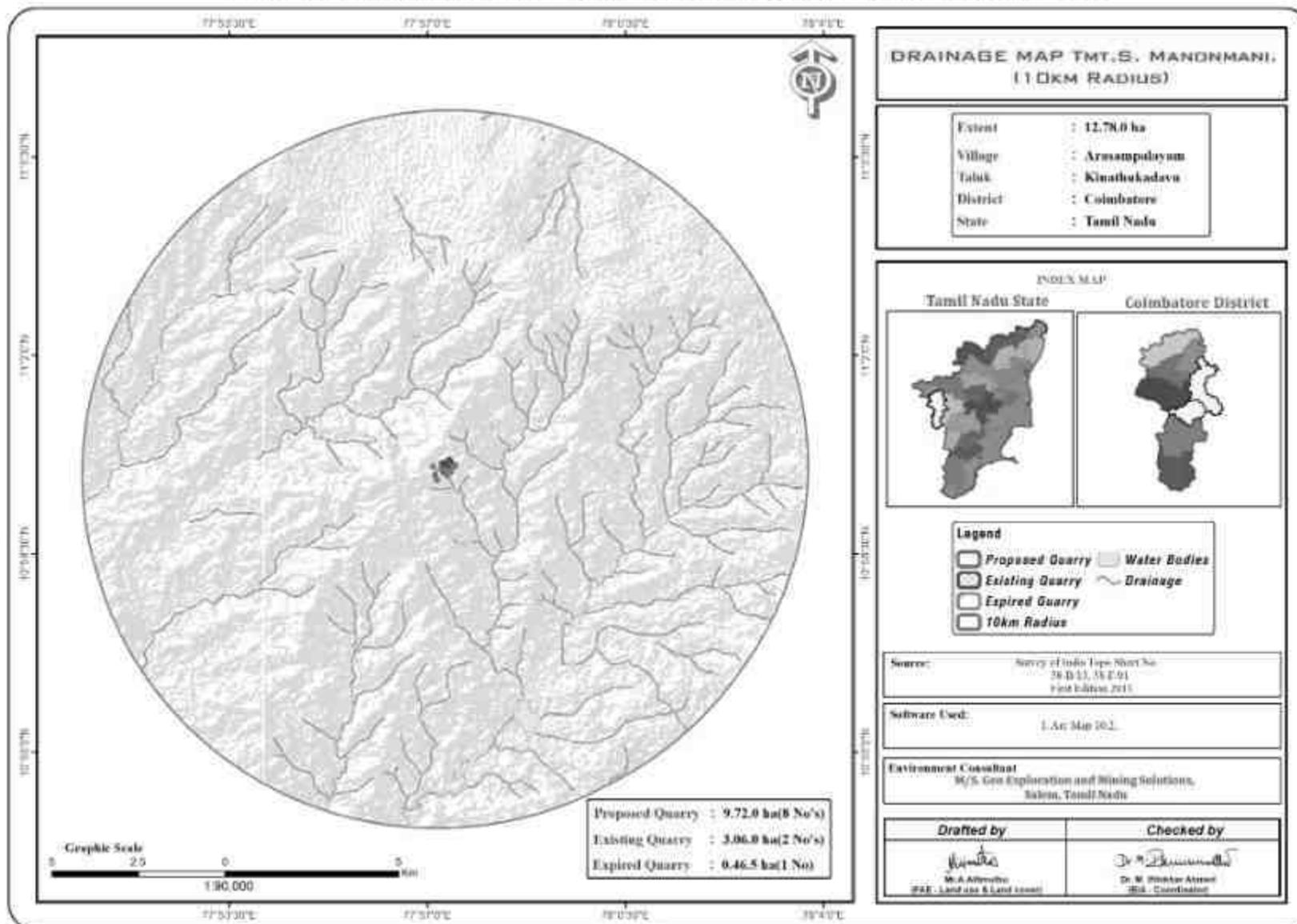
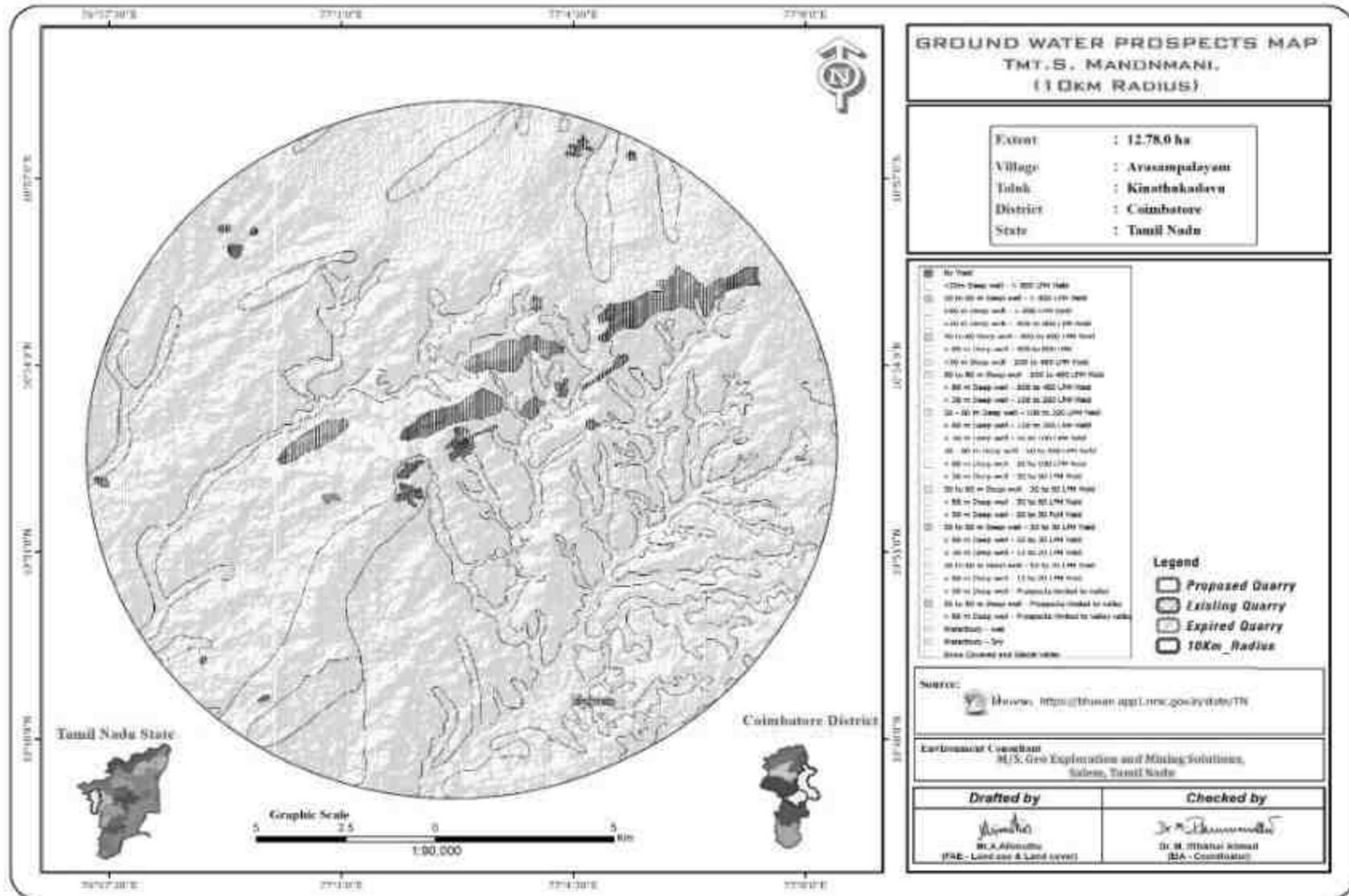


FIGURE 3.9: GROUND WATER LEVEL MAP



3.2.5.1 Methodology and Data Acquisition

Electric Resistivity Method is well established for delineating lateral as well vertical discontinuities in the resistive structure of the Earth's subsurface. The present study makes use of vertical electric sounding (VES) to delineate the Vertical Resistivity structure at depth. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation $AB/2$. The data from this survey are commonly arranged and contoured in the form of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical in homogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows

$$\rho_a = \frac{G \Delta V}{I}$$

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10-14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors; 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law;

$$\rho_r = F \rho_w = a \phi^m \rho_w$$

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

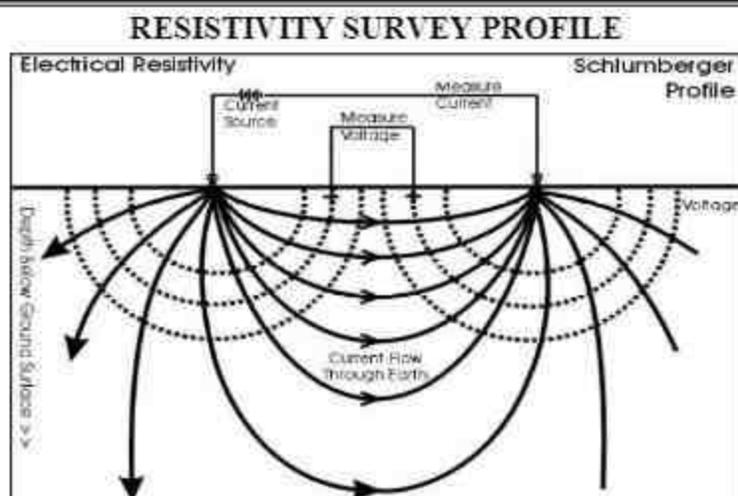
ϕ = Fractional pore volume

A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

The layout for a resistivity survey depends on the choice of the current and potential electrode arrangement, which is called electrode array. Here the present study is considered with Schlumberger array. In which the distance may be used for current electrode separation while potential electrode separation is kept on third to one fifth of the same. One interesting aspect in VES is the principle of reciprocity, which permits interchange of the potential and current electrode without any effect on the measured apparent resistivity.

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises the signal to noise ration can be enhanced by \sqrt{N} where N is the number of stacked readings. This SSR meter in which running averages of measurements $[1, (1+2)/2, (1+2+3)/3 \dots (1+2 \dots +16)/16]$ up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes (C_1 & C_2) and measuring the resulting potential by two other electrodes called potential electrode (P_1 & P_2). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 70-65m. The maximum depth proposed in this cluster quarries 27 m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation and Conclusion

The geophysical data's was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

Based on the Geophysical interpretation water table fracture zone is expected above 60m bgl. Water level in the open well is ranges from 10.4m to 12.5m bgl it is only collected from the seepage water in shallow depth open wells are selected on the basis of suitable lineament and hydro fractures environment in shallow depth. Water level in the bore well is ranges from 65.8 to 68m bgl which will clearly evidence that the potential aquifer in the area is above 65m bgl. The depth of the mining operation in the cluster is maximum 27m bgl hence **this mining operation will not intersect the Ground water table**. Seepage water will be collected in the mine pit will be utilized for greenbelt development and dust suppression.

3.3 Air Environment

The ambient air quality with respect to the study area of 10 km radius including the cluster quarries forms the baseline information. The prime objective of baseline air quality monitoring is to assess existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of Existing and proposed quarries within the radius of 500m.

The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. This section describes the identification of sampling locations; methodology adopted during the monitoring period and sampling frequency.

The baseline status of the ambient air quality has been assessed through scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions.
- Topography of the study area.
- Likely impact area.

3.3.1 Meteorology & Climate

Meteorology is the key to understand the air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate –

Coimbatore is 421m above sea level. Coimbatore's climate is classified as tropical. The summers here have a good deal of rainfall, while the winters have very little rain. This location is classified as Aw by Köppen and Geiger. In Coimbatore –

- The average annual temperature is 25.4°C | 77.8°F.
- The annual rainfall here is around 689mm | 27.12 inch.
- The driest month is January with 13mm | 0.5 inch of rainfall. The greatest amount of precipitation occurs in October, with an average of 181mm | 7.1 inch.
- The warmest month of the year is April, with an average temperature of 28.9°C | 84.1°F. The lowest average temperatures in the year occur in December, when it is around 23.2°C | 73.7°F.
- The difference in precipitation between the driest month and the wettest month is 168 mm | 7 inch. The variation in annual temperatures throughout the year is 5.8°C | 42.4°F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/coimbatore-2788/>

Rainfall –

The average annual rainfall and the 5 years rainfall is as follows:

TABLE 3.13 – RAINFALL DATA

Actual Rainfall in mm						Normal Rainfall in mm
2013	2014	2015	2016	2017	2018	
901.0	1221.7	992.9	505.5	873.4	1302.0	689.3

Source: <https://www.twadboard.tn.gov.in/content/coimbatore>

TABLE 3.14 – METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Mar-2021	April- 2021	May- 2021
1	Temperature ($^{\circ}\text{C}$)	Max	31.4	30.4	32.0
		Min	26.3	24.9	24.4
		Avg	28.8	27.6	28.2
2	Relative Humidity (%)	Avg	51	66	63
3	Wind Speed (m/s)	Max	6.389	4.375	8.000
		Min	1.458	1.528	0.903
		Avg	3.923	2.951	4.451
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		NE, ENE	SSW, SSE	WSW, SSW

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

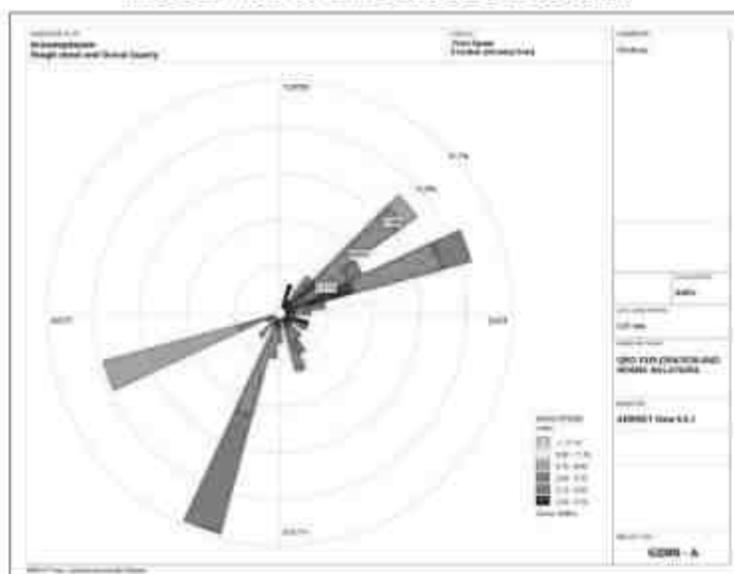
Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Coimbatore. A comparison of site data generated during the three months with that of IMD, Coimbatore Agro reveals the following:

- The average maximum and minimum temperatures of IMD, Coimbatore agro showed a higher in respect of on-site data i.e. in Arasampalayam village.
- The relative humidity levels were lesser at site as compared to IMD, Coimbatore agro.
- The wind speed and direction at site shows similar trend that of IMD, Coimbatore agro.

Windrose diagram of the study site is depicted in Figure. 3.8. Predominant downwind direction of the area during study season is North East to South West.

FIGURE 3.10: WINDROSE DIAGRAM



Environmental

In the abstract of collected data wind rose were drawn on presented in figure No.3.15 during the monitoring period in the study area

1. Predominant winds were from NE- SW
2. Wind velocity readings were recorded between 0.50 to 8.80 km / hour

3. Calm conditions prevail of about 0.00% of the monitoring period
4. Temperature readings ranging from 24.4^o to 32.0^oC
5. Relative humidity ranging from 51 to 66 %
6. The monitoring was carried out continuously for three months

3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability; etc.,

3.3.3 Sampling and Analytical Techniques

TABLE 3.15 – METHODOLOGY AND INSTRUMENT USED FOR AIR QUALITY ANALYSIS

Parameter	Method	Instrument
PM _{2.5}	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM ₁₀	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make – Thermo Environmental Instruments – TEI 108
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hochheiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by Enviro-Tech Services Laboratories & CPCB Notification

TABLE 3.16 – NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	Sulphur Dioxide ($\mu\text{g}/\text{m}^3$)	Annual Avg.* 24 hours**	50.0	20.0
			80.0	80.0
2	Nitrogen Dioxide ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	40.0	30.0
			80.0	80.0
3	Particulate matter (size less than 10 μm) PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	60.0	60.0
			100.0	100.0
4	Particulate matter (size less than 2.5 μm) PM _{2.5} ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	40.0	40.0
			60.0	60.0

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18th Nov 2009

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval.

** 24 hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at seven (7) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March - May 2021. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂).

3.3.5 Ambient Air Quality Monitoring Stations

Ten (10) monitoring stations were set up in the study area as depicted in Figure 3.6.1 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17 – AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Core Zone	-	10°52'42.59"N 77°3'11.73"E
2	AAQ-2	Core Zone	-	10°52'55.94"N 77° 3'05.43"E
3	AAQ-3	Core Zone	-	10°52'49.17"N 77° 2'45.99"E
4	AAQ-4	Core Zone	-	10°52'35.64"N 77° 2'44.49"E
5	AAQ-5	Malumichampatty	3.6km NW	10°54'14.41"N 77° 0'49.53"E
6	AAQ-6	Othakaimandapam	2.6km West	10°52'47.91"N 77° 0'41.58"E
7	AAQ-7	Chettipalayam	2.8km North	10°55'1.47"N 77° 2'51.18"E
8	AAQ-8	Vadasithur	5km SE	10°50'21.48"N 77° 4'56.52"E
9	AAQ-9	Arasampalayam	2.0km South	10°50'54.42"N 77° 2'29.15"E
10	AAQ-10	ponnakkani	4.2km NE	10°53'30.52"N 77° 5'49.82"E

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS.

FIGURE 3.11: SITE PHOTOGRAPHS OF AMBIENT AIR MONITORING



Source: Monitoring photographs from the FAE and Team Members

FIGURE 3.12 AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

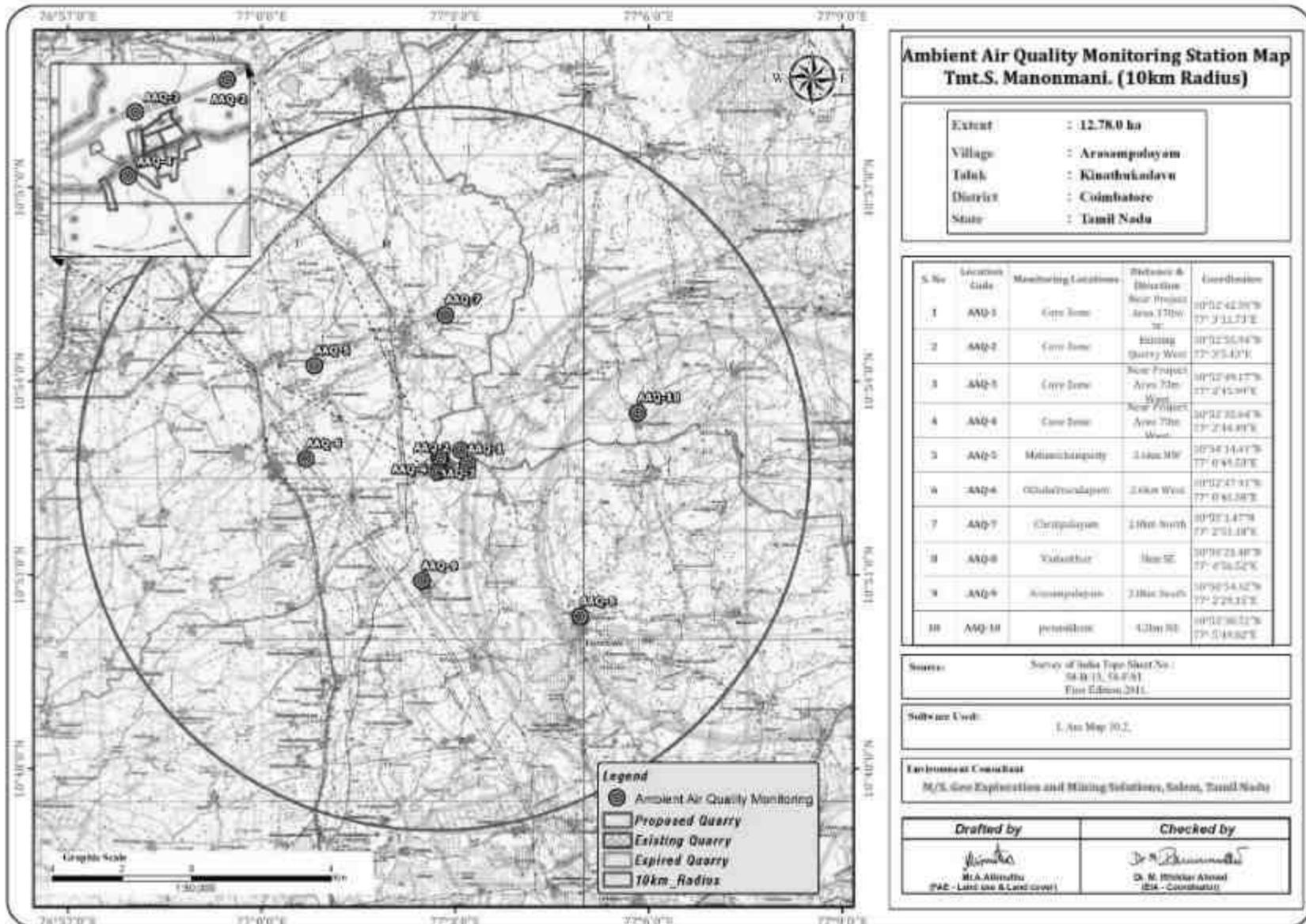


TABLE 3.18 – AAQ1- CORE ZONE

Period: March – May-2021

Location: AAQ1- South East Corner

Sampling Time: 24-hourly

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM (24 hrs.)	PM _{2.5} 60(24 hrs.)	PM ₁₀ 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	07.00-07.00	63.8	24.1	44.7	8.9	25.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
03.03.2021	07.15-07.15	64.7	22.8	42.6	7.7	23.9	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
09.03.2021	07.00-07.00	63.5	23.3	43.4	10.3	24.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
10.03.2021	07.15-07.15	62.8	24.9	41.8	8.4	26.8	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
16.03.2021	07.00-07.00	62.5	23.7	43.6	7.6	24.1	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
17.03.2021	07.15-07.15	64.7	23.5	45.5	10.5	25.5	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
23.03.2021	07.00-07.00	65.5	23.1	46.5	9.3	23.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
24.03.2021	07.15-07.15	62.3	22.6	42.9	10.4	24.8	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
30.03.2021	07.00-07.00	63.5	23.7	45.3	8.7	25.6	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
31.03.2021	07.15-07.15	62.4	22.1	43.9	10.3	26.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
06.04.2021	07.00-07.00	63.8	23.2	43.7	9.6	24.1	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
07.04.2021	07.15-07.15	65.2	21.7	42.6	11.2	25.9	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
13.04.2021	07.00-07.00	61.5	24.4	42.5	10.5	26.8	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
14.04.2021	07.15-07.15	63.7	23.9	43.3	9.4	24.4	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
20.04.2021	07.00-07.00	62.5	23.8	42.7	10.6	23.6	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
21.04.2021	07.15-07.15	66.8	23.3	42.8	9.3	23.8	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
27.04.2021	07.00-07.00	64.2	24.4	43.4	8.7	25.5	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
28.04.2021	07.15-07.15	63.5	23.6	42.9	10.5	24.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
04.05.2021	07.00-07.00	65.5	21.5	45.1	11.2	23.6	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
05.05.2021	07.15-07.15	62.9	23.7	43.6	9.4	25.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
11.05.2021	07.00-07.00	64.4	22.9	43.7	10.2	26.2	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
12.05.2021	07.15-07.15	63.4	23.1	42.8	11.5	23.4	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
18.05.2021	07.00-07.00	62.9	23.5	41.9	8.3	24.7	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
19.05.2021	07.15-07.15	62.3	22.8	43.6	8.7	25.5	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
25.05.2021	07.00-07.00	62.7	23.1	44.3	9.6	25.1	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0
26.05.2021	07.15-07.15	62.5	22.5	42.8	8.9	25.9	<5	<5	<1.0	<0.01	<5	<5	<1.0	<3.0

TABLE 3.19 - AAQ2 - CORE ZONE

Period: March - May-2021

Location: AAQ2- Core Zone

Time: 24-hourly

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₂ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07.15-07.15	63.7	19.6	43.9	8.3	16.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	07.30-07:30	61.2	20.9	41.8	8.1	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	07.15-07.15	60.9	18.7	42.7	8.2	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	07.30-07:30	62.5	20.3	40.4	8.6	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	07.15-07.15	63.6	21.4	40.6	8.7	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	07.30-07:30	62.8	22.5	41.9	5.6	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	07.15-07.15	61.4	24.1	40.3	8.2	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	07.30-07:30	65.9	23.6	42.4	8.4	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	07.15-07.15	63.1	23.8	43.1	8.3	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	07.30-07:30	62.9	24.7	41.8	8.9	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	07.15-07.15	60.7	23.6	42.6	9.2	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	07.30-07:30	62.8	23.5	42.8	9.5	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	07.15-07.15	62.3	21.8	42.5	9.7	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07.15-07.15	62.5	20.3	43.4	9.3	26.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07.00-07.00	63.9	23.5	42.6	9.1	24.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07.15-07.15	63.4	21.2	43.4	9.7	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07.00-07.00	61.2	19.7	42.9	9.2	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07.15-07.15	65.9	20.3	43.6	8.6	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07.00-07.00	65.1	21.4	42.5	8.4	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07.15-07.15	62.8	21.6	42.7	8.2	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07.00-07.00	62.9	20.5	43.3	8.7	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07.15-07.15	63.6	21.3	42.9	8.6	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07.00-07.00	64.4	22.6	41.6	8.7	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07.15-07.15	63.9	20.8	42.5	9.3	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07.00-07.00	63.1	21.7	42.6	9.2	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07.15-07.15	32.7	21.5	42.7	9.1	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.20 – AAQ3 – CORE ZONE

Period: March – May-2021

: AAQ3- Core Zone

Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₄ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*			60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07.15-07.15	62.8	22.8	42.7	7.3	25.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	07.30-07.30	61.8	26.4	46.3	7.9	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	07.15-07.15	64.5	25.3	45.5	7.6	26.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	07.30-07.30	63.9	23.9	45.9	7.1	25.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	07.15-07.15	65.7	26.7	46.3	7.6	27.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	07.30-07.30	65.6	23.9	46.7	8.6	24.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	07.15-07.15	64.7	24.4	42.3	8.1	26.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	07.30-07.30	62.9	25.3	45.8	8.3	25.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	07.15-07.15	63.5	26.8	45.5	8.1	25.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	07.30-07.30	62.9	23.9	46.3	7.3	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	07.15-07.15	65.8	26.4	46.6	7.6	27.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	07.30-07.30	62.4	24.5	46.7	7.1	26.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	07.15-07.15	63.5	26.5	45.2	7.2	28.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07.15-07.15	64.6	26.7	43.9	7.3	26.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07.00-07.00	65.8	23.9	42.7	7.5	25.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07.15-07.15	65.3	25.5	42.8	7.6	25.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07.00-07.00	65.9	26.7	46.4	7.1	25.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07.15-07.15	66.2	26.3	46.1	7.2	24.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07.00-07.00	63.6	25.4	43.9	7.8	28.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07.15-07.15	65.7	25.8	46.5	8.3	25.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07.00-07.00	64.8	26.9	46.7	8.4	25.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07.15-07.15	65.9	26.3	42.8	8.6	26.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07.00-07.00	65.4	25.7	46.3	7.1	26.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07.15-07.15	63.2	24.9	45.9	7.4	26.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07.00-07.00	61.7	24.7	44.2	7.6	25.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07.15-07.15	62.9	24.3	44.1	7.1	25.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.21- AAQ4 - CORE ZONE

Period: March - May-2021

Location: AAQ4 - Core Zone

Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₂ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	07.00-07.00	63.2	22.8	41.4	6.3	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	07.15-07:15	61.9	21.9	43.2	6.7	24.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	07.00-07.00	62.4	20.5	41.9	6.5	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	07.15-07:15	63.6	23.1	43.5	7.6	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	07.00-07.00	62.7	22.9	41.7	7.9	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	07.15-07:15	61.6	22.4	42.4	7.5	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	07.00-07.00	62.5	21.6	43.6	7.8	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	07.15-07:15	61.9	21.9	41.7	7.6	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	07.00-07.00	64.4	23.5	42.3	7.1	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	07.15-07:15	62.3	21.9	44.4	7.5	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	07.00-07.00	62.8	21.4	45.5	7.8	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	07.15-07:15	63.5	22.5	42.5	7.8	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	07.00-07.00	62.9	23.8	43.8	7.6	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07.15-07:15	62.4	21.1	44.2	6.3	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07.00-07.00	65.5	22.4	41.9	6.4	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07.15-07:15	62.9	22.5	44.3	6.8	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07.00-07.00	63.7	20.3	42.9	6.7	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07.15-07:15	62.4	21.2	42.4	6.1	25.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07.00-07.00	62.3	21.8	42.7	6.1	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07.15-07:15	62.8	22.7	41.9	7.6	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07.00-07.00	63.7	24.3	43.2	7.8	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07.15-07:15	62.5	21.9	44.6	7.1	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07.00-07.00	62.6	24.2	42.4	7.5	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07.15-07:15	62.1	23.4	42.9	7.6	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07.00-07.00	61.5	26.3	42.7	7.9	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07.15-07:15	62.8	25.7	42.9	7.1	24.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.22 – AAQ5 – MALUMICHAMPATTY (BUFFER ZONE)

Period: March – May-2021

: AAQ5- Malumichampatty

Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07:30-07:30	65.8	25.5	42.9	6.3	25.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	07:45-07:45	63.8	23.7	45.4	6.7	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	07:30-07:30	64.9	24.4	43.3	6.8	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	07:45-07:45	65.7	23.3	43.7	6.4	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	07:30-07:30	63.6	25.7	42.4	6.2	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	07:45-07:45	65.9	23.8	42.6	6.7	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	07:30-07:30	67.2	25.5	45.1	6.2	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	07:45-07:45	66.4	24.1	43.4	6.9	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	07:30-07:30	62.3	23.9	43.8	6.1	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	07:45-07:45	65.3	25.4	41.9	6.2	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	07:30-07:30	62.8	23.7	43.6	6.7	20.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	07:45-07:45	64.1	24.1	42.4	6.2	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	07:30-07:30	62.3	23.5	42.5	5.6	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	62.7	23.6	44.7	5.9	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	62.3	25.5	43.4	7.1	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	63.4	24.4	42.5	7.6	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	62.8	23.9	41.9	7.1	24.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	63.3	25.4	42.4	7.2	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	62.9	21.5	43.6	7.9	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	64.6	23.8	45.4	7.1	25.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	65.5	22.5	46.6	7.5	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	62.8	25.4	43.7	7.6	26.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	61.6	23.9	42.8	7.1	25.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	63.9	24.7	41.9	7.6	26.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	62.3	24.3	42.6	6.5	25.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	61.8	23.7	42.7	6.1	24.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.23 – AAQ6 - OTHAKALMANDAPAM (BUFFER ZONE)

Period: March – May-2021

Location: AAQ6 – Othakalmandapam

Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	08:00-08:00	62.3	22.7	41.3	7.6	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	08:15-08:15	62.8	23.4	42.7	8.6	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	08:00-08:00	61.6	21.6	43.4	8.1	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	08:15-08:15	63.8	23.5	41.8	8.3	20.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	08:00-08:00	64.4	22.8	43.6	7.1	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	08:15-08:15	62.3	25.5	42.4	7.6	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	08:00-08:00	64.9	23.7	41.8	7.1	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	08:15-08:15	64.2	21.9	43.9	7.6	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	08:00-08:00	62.5	23.6	42.7	6.5	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	08:15-08:15	63.8	21.4	42.6	6.4	23.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	08:00-08:00	61.7	23.7	40.7	6.6	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	08:15-08:15	62.9	21.8	40.9	6.1	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	08:00-08:00	63.5	21.3	42.5	6.4	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	61.4	22.5	41.9	6.7	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	63.6	24.6	42.4	6.2	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	62.7	25.7	43.7	6.9	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	62.5	23.5	41.9	6.1	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	63.9	21.6	42.6	6.8	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	62.6	25.9	42.2	7.3	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	62.1	23.1	46.1	7.5	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	62.3	25.3	44.5	7.1	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	64.4	24.1	42.5	7.5	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	64.7	26.9	43.7	7.3	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	62.3	23.7	43.9	7.1	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	61.2	24.9	42.1	7.8	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	61.8	23.7	42.7	7.2	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.24 – AAQ7 - CHETTIPALAYAM VILLAGE (BUFFER ZONE)

Period: March – May-2021

Location: AAQ7 – Chettipalayam Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	08:00-08:00	61.9	23.3	43.7	6.8	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	08:15-08:15	63.7	21.6	41.9	6.3	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	08:00-08:00	62.8	22.4	42.6	6.1	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	08:15-08:15	64.2	23.9	43.8	5.8	23.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	08:00-08:00	63.9	22.6	42.7	5.2	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	08:15-08:15	62.5	23.5	43.5	5.1	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	08:00-08:00	61.9	21.7	41.6	5.3	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	08:15-08:15	64.7	22.8	43.6	5.0	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	08:00-08:00	61.9	25.3	42.5	5.8	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	08:15-08:15	63.7	23.9	44.9	5.6	23.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	08:00-08:00	62.9	21.7	41.9	5.1	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	08:15-08:15	62.5	24.4	43.6	5.8	24.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	08:00-08:00	63.8	23.6	42.7	6.6	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	61.4	25.9	43.6	6.5	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	62.5	21.7	41.9	6.4	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	63.9	23.3	42.5	5.5	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	61.5	25.6	43.4	5.6	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	62.8	25.7	41.9	5.1	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	63.6	21.9	42.4	5.6	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	64.9	22.1	41.8	5.7	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	62.3	24.3	43.4	6.2	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	62.8	21.9	42.7	6.3	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	62.5	23.7	43.6	6.5	20.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	61.7	22.4	41.9	6.1	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	61.2	21.3	41.9	6.8	20.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	61.5	21.5	42.5	6.4	20.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.25 – AAQ8 - VADASITHUR VILLAGE (BUFFER ZONE)

Period: March – May-2021

Location: AAQ8- Vadasithur Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	08:00-08:00	62.9	20.3	43.2	5.3	23.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	08:15-08:15	62.0	20.9	43.5	5.3	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	08:00-08:00	62.8	21.3	43.9	5.6	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	08:15-08:15	62.4	21.4	43.7	5.4	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	08:00-08:00	60.2	21.6	43.5	5.3	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	08:15-08:15	60.8	21.7	44.6	6.5	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	08:00-08:00	60.4	20.3	44.2	6.1	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	08:15-08:15	60.9	20.1	44.3	6.5	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	08:00-08:00	61.2	20.4	43.5	6.1	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	08:15-08:15	61.5	19.3	44.3	6.4	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	08:00-08:00	61.9	19.7	42.5	6.8	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	08:15-08:15	61.2	18.3	42.6	6.3	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	08:00-08:00	60.2	18.9	41.6	6.4	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	59.7	19.4	42.7	6.9	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	59.8	20.3	44.6	6.7	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	60.2	21.3	42.3	6.8	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	60.9	23.2	42.3	6.1	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	61.3	22.5	43.8	6.4	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	61.7	22.4	43.7	7.3	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	61.5	23.5	43.6	7.5	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	61.6	21.2	43.2	7.6	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	61.8	21.3	42.3	7.1	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	61.3	21.5	42.9	7.5	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	61.0	20.3	42.7	7.6	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	62.3	21.3	42.9	7.8	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	62.5	21.5	42.5	7.9	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.26 – AAQ9 - ARASAMPALAYAM VILLAGE (BUFFER ZONE)

Period: March – May-2021

Location: AAQ9 – Arasampalayam Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	08:00-08:00	60.7	21.7	40.7	8.6	13.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	08:15-08:15	61.9	23.5	40.3	8.1	24.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	08:00-08:00	62.5	21.9	42.1	7.6	24.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	08:15-08:15	63.8	23.6	43.6	7.2	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	08:00-08:00	60.9	22.9	40.5	7.8	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	08:15-08:15	64.4	24.1	40.2	7.6	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	08:00-08:00	62.3	23.6	40.8	7.1	24.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	08:15-08:15	62.7	20.9	41.9	7.5	24.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	08:00-08:00	61.3	24.1	43.7	8.0	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	08:15-08:15	62.7	23.5	41.2	8.3	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	08:00-08:00	62.8	21.8	43.9	8.2	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	08:15-08:15	63.6	24.3	42.4	8.1	25.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	08:00-08:00	62.7	21.7	43.6	7.5	25.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	63.7	23.4	43.8	7.1	25.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	62.9	21.8	41.7	6.9	25.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	61.9	21.5	44.2	6.8	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	64.7	23.7	42.6	6.5	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	63.9	21.6	42.8	6.2	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	65.5	22.5	43.4	6.1	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	64.4	23.9	41.5	6.5	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	61.9	21.7	42.1	6.4	24.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	62.3	22.5	42.7	6.5	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	61.7	21.8	43.2	6.8	25.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	63.6	20.7	42.3	6.5	26.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	61.5	21.3	42.6	6.4	25.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	61.3	21.5	42.1	6.1	25.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.27 – AAQ10 - PONNAKKANI VILLAGE (BUFFER ZONE)

Period: March – May-2021

Location: AAQ10–Ponnakkani Sampling Time: 24-hourly

Monitoring		SPM (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5 60(24 hrs.)	PM10 100 (24 hrs.)	SO ₂ 80 (24 hrs.)	NO ₂ 80 (24 hrs.)	NH ₃ 400 (24 hrs.)	O ₃ (8-hly Avg.) 100 (8 hrs.)	CO (8-hly Avg.) 2.0 (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ 1.0 (24 hrs.)	As, ng/m^3 6.0 (annual)	Ni, ng/m^3 20 (annual)	C ₆ H ₆ , ng/m^3 5.0 (annual)	BaP, ng/m^3 1.0 (annual)
02.03.2021	08:00-08:00	57.6	22.1	43.5	5.5	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.03.2021	08:15-08:15	57.2	21.9	44.3	5.3	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.03.2021	08:00-08:00	58.6	22.5	42.1	5.4	20.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.03.2021	08:15-08:15	56.2	21.4	43.9	5.9	19.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2021	08:00-08:00	56.4	21.6	42.4	5.1	19.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2021	08:15-08:15	56.8	21.5	43.7	5.5	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2021	08:00-08:00	57.3	22.5	43.3	5.7	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.03.2021	08:15-08:15	57.5	21.1	42.7	5.5	20.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.03.2021	08:00-08:00	56.8	22.5	42.9	5.3	20.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
31.03.2021	08:15-08:15	56.2	22.9	43.0	5.9	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.04.2021	08:00-08:00	56.3	23.4	43.8	5.1	20.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.04.2021	08:15-08:15	56.8	22.1	43.1	5.7	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.04.2021	08:00-08:00	57.2	21.6	43.6	5.3	20.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.04.2021	07:15-07:15	57.4	22.5	42.8	5.7	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.04.2021	07:00-07:00	57.9	21.6	42.3	5.2	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.04.2021	07:15-07:15	56.2	22.4	43.7	5.9	19.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.04.2021	07:00-07:00	56.3	23.5	43.1	5.7	19.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.04.2021	07:15-07:15	56.8	22.1	42.8	5.0	19.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.05.2021	07:00-07:00	56.1	22.7	43.5	5.9	19.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.05.2021	07:15-07:15	57.3	22.5	42.3	5.6	19.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.05.2021	07:00-07:00	57.7	22.4	43.1	5.3	19.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.05.2021	07:15-07:15	57.9	21.5	42.9	5.1	19.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.05.2021	07:00-07:00	56.6	23.1	42.1	5.5	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.05.2021	07:15-07:15	56.2	24.6	43.7	5.7	20.0	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.05.2021	07:00-07:00	57.9	22.5	42.8	5.8	20.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.05.2021	07:15-07:15	57.6	22.9	43.2	5.9	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

TABLE 3.28 – ABSTRACT OF AMBIENT AIR QUALITY DATA

Sl. No	Parameter	Pollutant Concentration, $\mu\text{g}/\text{m}^3$			
		PM _{2.5}	PM ₁₀	SO ₂	NO ₂
1	No. of Observations	260	260	260	260
2	10th Percentile Value	21.10	41.89	5.60	20.60
3	20th Percentile Value	21.50	42.30	6.10	21.60
4	30th Percentile Value	21.80	42.50	6.40	22.30
5	40th Percentile Value	22.50	42.70	6.70	22.82
6	50th Percentile Value	22.90	42.90	7.10	23.50
7	60th Percentile Value	23.50	43.40	7.50	23.70
8	70th Percentile Value	23.73	43.60	7.73	24.10
9	80th Percentile Value	24.30	43.90	8.30	24.90
10	90th Percentile Value	25.41	45.10	9.10	25.72
11	95th Percentile Value	25.90	46.10	9.61	26.50
12	98th Percentile Value	26.66	46.50	10.50	26.80
13	Arithmetic Mean	23.57	43.72	7.69	23.87
14	Geometric Mean	23.51	43.69	7.56	23.79
15	Standard Deviation	1.85	1.55	1.54	1.99
16	NAAQ Norms*	60	100	80	80
17	% Values exceeding Norms*	0	0	0	0

Legend: PM_{2.5}-Particulate Matter size less than 2.5 μm ; PM₁₀-Respirable Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NO₂-Nitrogen Dioxide; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits.

* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Area.

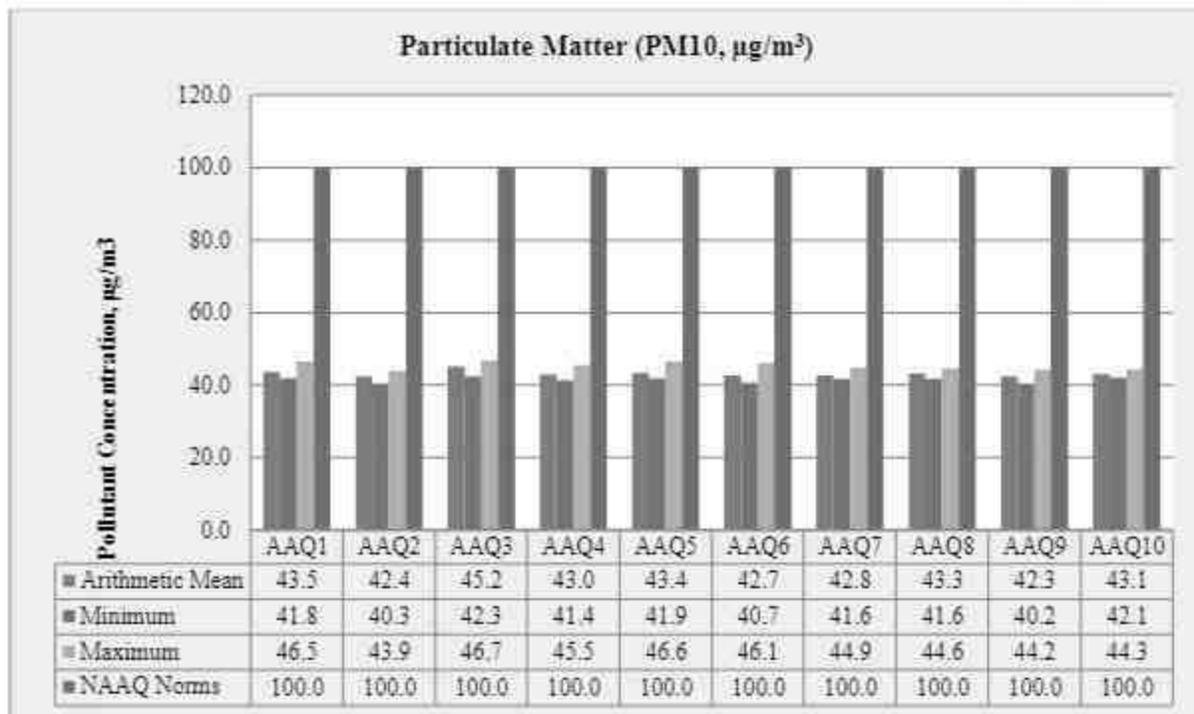
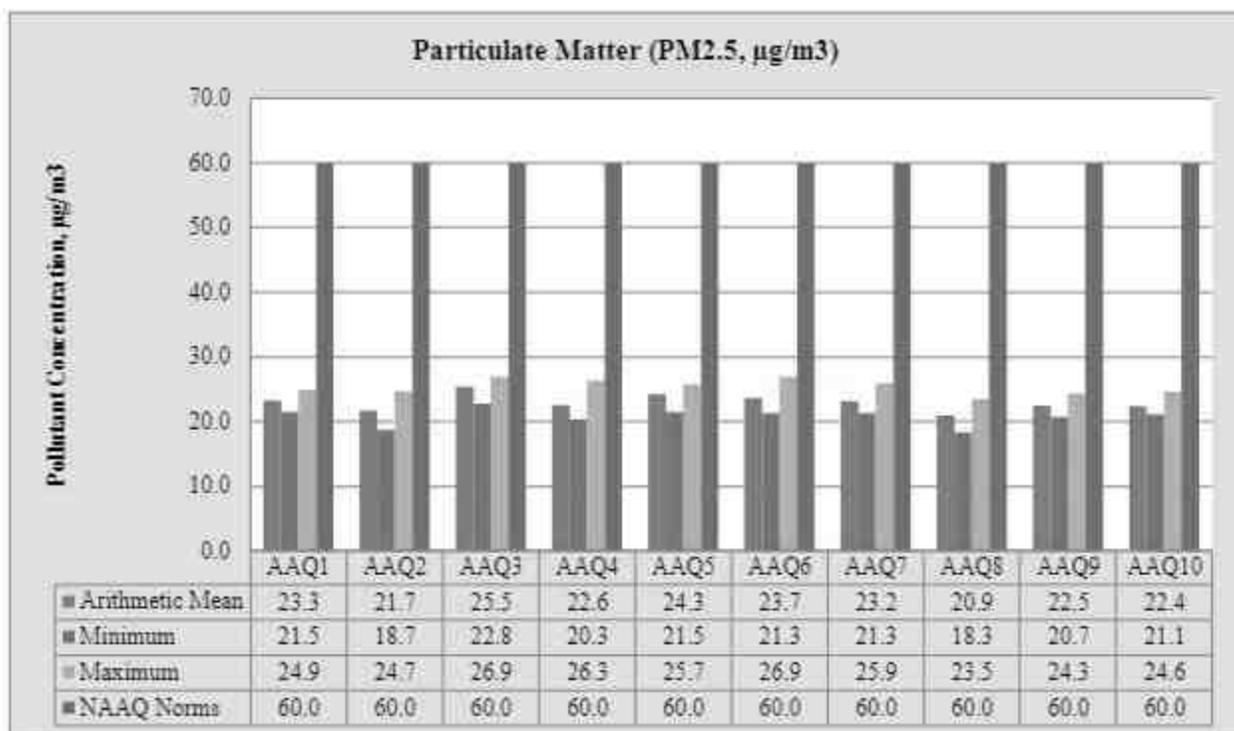
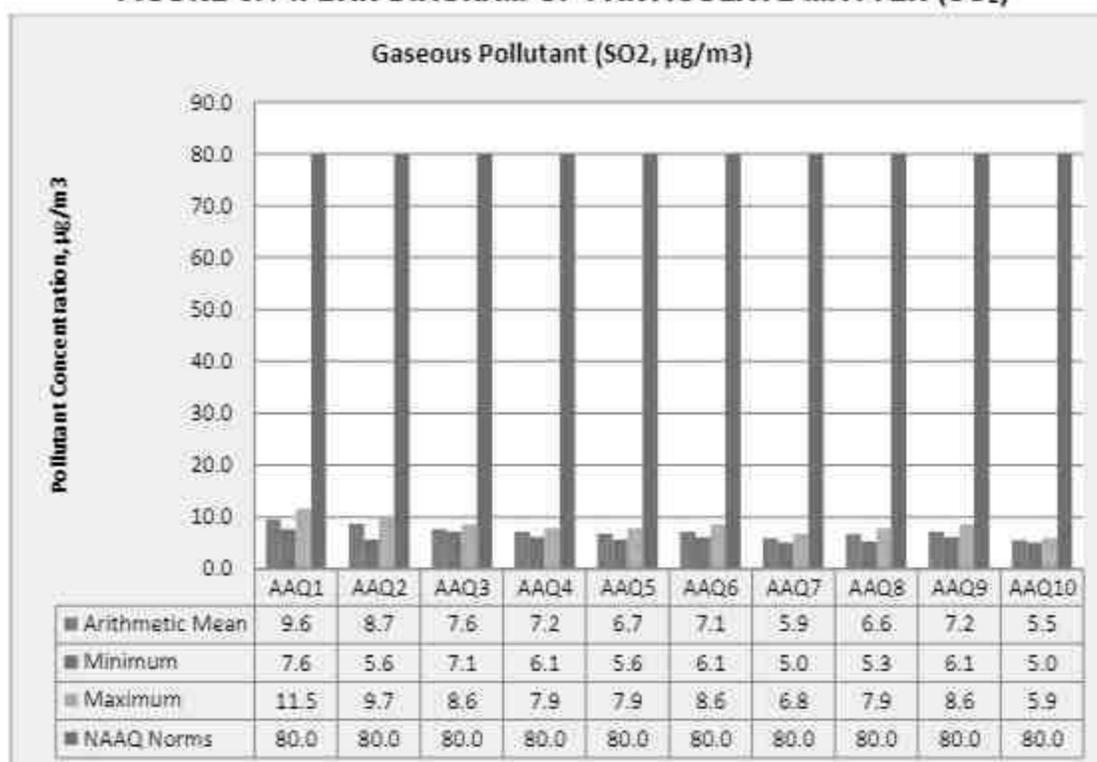
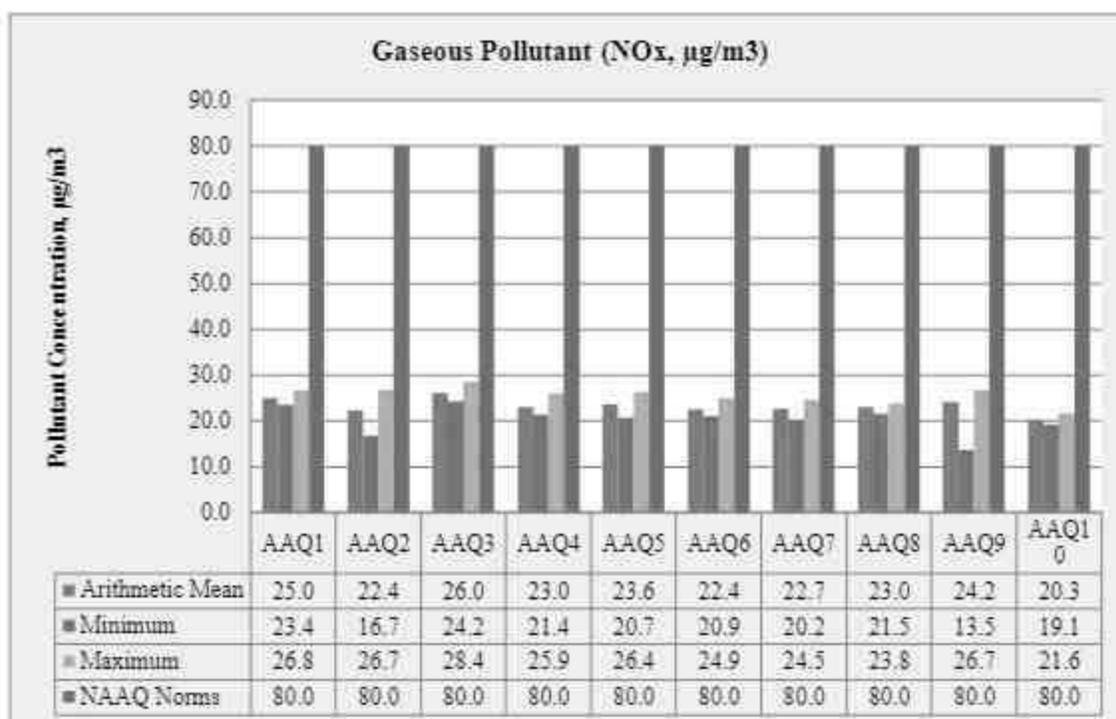
FIGURE 3.13 : BAR DIAGRAM OF PARTICULATE MATTER (PM₁₀)**FIGURE 3.13A : BAR DIAGRAM OF PARTICULATE MATTER (PM_{2.5})**

FIGURE 3.14: BAR DIAGRAM OF PARTICULATE MATTER (SO₂)**FIGURE 3.14A: BAR DIAGRAM OF PARTICULATE MATTER (NO₂)**

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 40.2 µg/m³ to 46.7 µg/m³, PM_{2.5} data ranges from 18.3 µg/m³ to 26.9 µg/m³, SO₂ ranges from 5.0 µg/m³ to 11.5 µg/m³ and NO₂ data ranges from 13.5 µg/m³ to 28.4 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

The minimum & maximum concentrations of PM₁₀ were found to be 40.2 µg/m³ in Arasampalayam village & 46.7 µg/m³ in Project area respectively. The minimum & maximum concentrations of PM_{2.5} were found to be 18.3 µg/m³ in Arasampalayam village & 26.9 µg/m³ in Othakalmandapam area respectively. The maximum concentration in the core zone is due to the cluster of quarries situated within 500m radius.

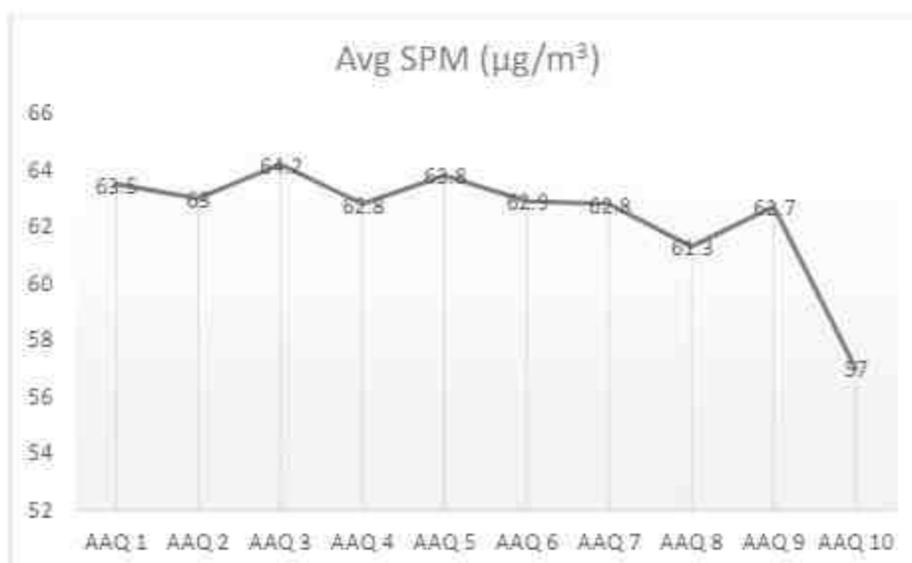
3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 10 AAQ monitoring stations for 30 days average during the study period.

TABLE 3.29– AVERAGE FUGITIVE DUST SAMPLE VALUES IN µg/m³

AAQ Locations	Avg SPM (µg/m ³)
AAQ 1	63.5
AAQ 2	63.0
AAQ 3	64.2
AAQ 4	62.8
AAQ 5	63.8
AAQ 6	62.9
AAQ 7	62.8
AAQ 8	61.3
AAQ 9	62.7
AAQ 10	57.0

Source: Onsite monitoring/ sampling by Omega Laboratories

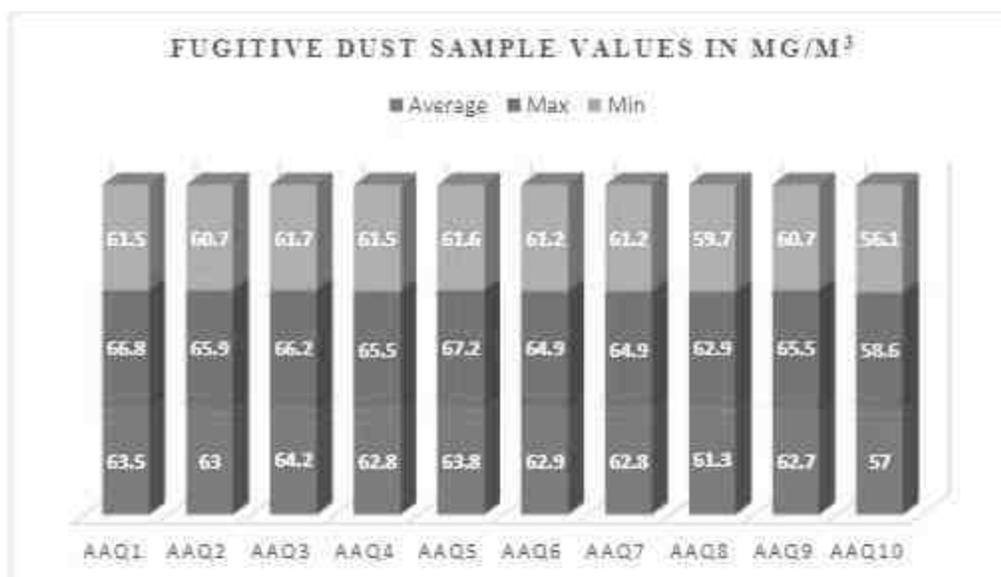


Source: Line Diagram of Table 3.20

TABLE 3.30- FUGITIVE DUST SAMPLE VALUES IN $\mu\text{g}/\text{m}^3$ -

SPM ($\mu\text{g}/\text{m}^3$)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8	AAQ9	AAQ10
Average	63.5	63.0	64.2	62.8	63.8	62.9	62.8	61.3	62.7	57.0
Max	66.8	65.9	66.2	65.5	67.2	64.9	64.9	62.9	65.5	58.6
Min	61.5	60.7	61.7	61.5	61.6	61.2	61.2	59.7	60.7	56.1

Source: Calculations from Lab Analysis Reports.



Source: Bar Diagram of table 3.14

3.4 Noise Environment

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at ten (10) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

TABLE 3.31 – DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	N-1	Core Zone	-	10°52'40.61"N 77°03'12.48"E
2	N-2	Core Zone	-	10°52'56.11"N 77°03'05.89"E
3	N-3	Core Zone	-	10°52'49.44"N 77°02'46.17"E
4	N-4	Core Zone	-	10°52'35.95"N 77°02'44.62"E
5	N-5	Malumichampatty	3.5km NW	10°54'13.99"N 77°00'49.66"E
6	N-6	Othakalmandapam	2.6km West	10°52'48.27"N 77° 0'42.06"E
7	N-7	Chettipalayam	2.8km North	10°55'1.69"N 77° 2'51.45"E
8	N-8	Vadasithur	4.8km SE	10°50'21.58"N 77° 4'56.10"E
9	N-9	Arasampalayam	1.8km South	10°50'57.32"N 77° 2'27.69"E
10	N-10	ponnakkani	4.2km NE	10°53'30.36"N 77° 5'49.43"E

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by Leq, is used. Equivalent sound level, 'Leq', can be obtained from variable sound pressure level, 'L', over a time period by using following equation.

$$Leq = 10 \log L / T \sum (10L_n/10)$$

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

3.4.3 Analysis of Ambient Noise Level in the Study Area

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.6

Day time : 6:00 hours to 22:00 hours.

Night time : 22:00 hours to 6:00 hours

TABLE 3.32 – NOISE MONITORING RESULTS IN CORE AND BUFFER ZONE

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Project Area	48.4	37.0	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Project Area	47.1	40.0	
3	Project Area	48.7	37.7	
4	Project Area	39.4	35.4	
5	Malumichampatty	47.5	35.5	Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
6	Othakalmandapam	48.9	36.7	
7	Chettipalayam	47.5	38.0	
8	Vadasithur	46.7	39.1	
9	Arasampalayam	48.1	38.4	
10	Ponnakkani	39.7	36.5	

Source: On-site monitoring/sampling by Enviro-Tech Services Laboratories in association with GEMS

FIGURE 3.15: NOISE MONITORING STATIONS AROUND 10 KM RADIUS

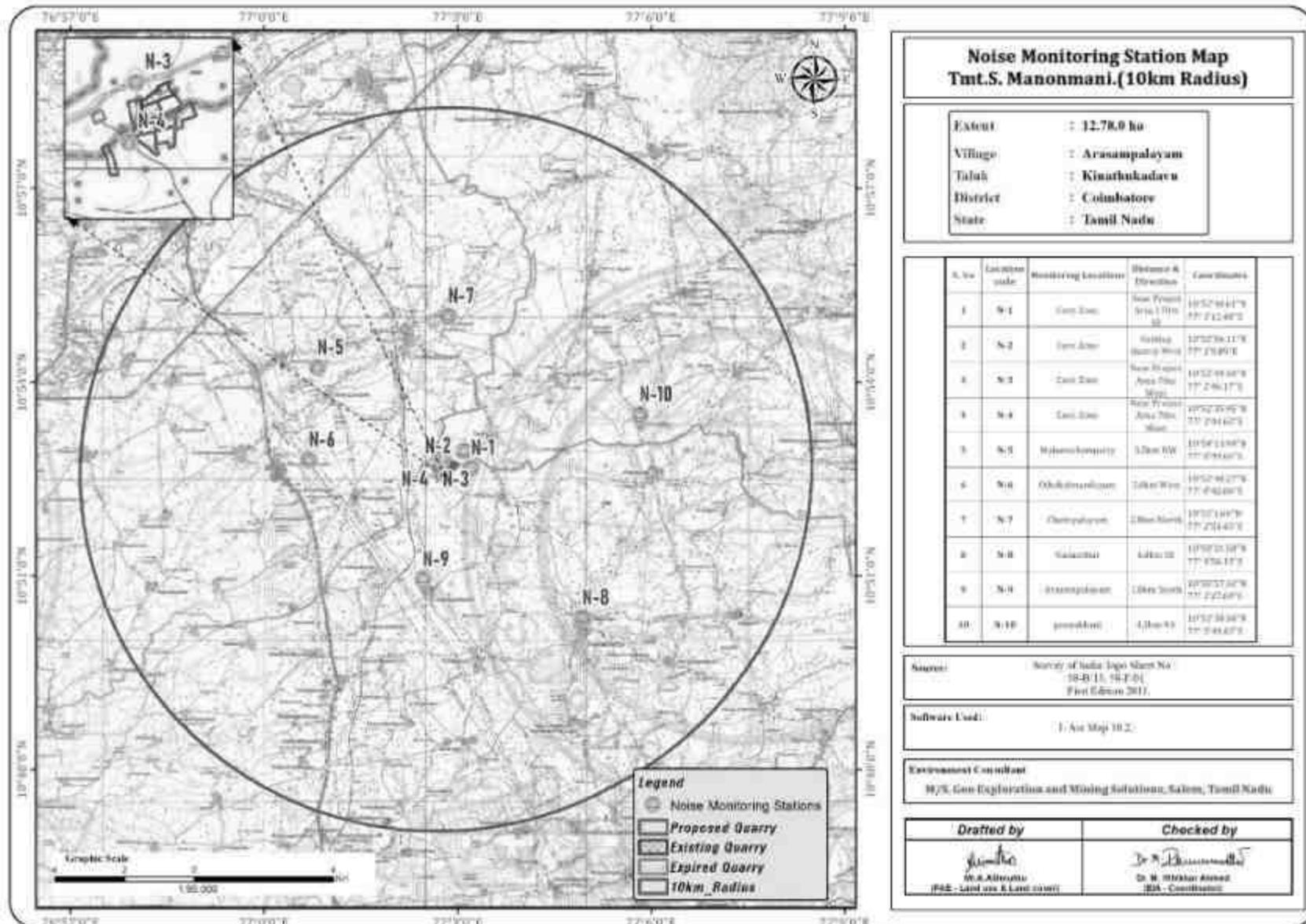
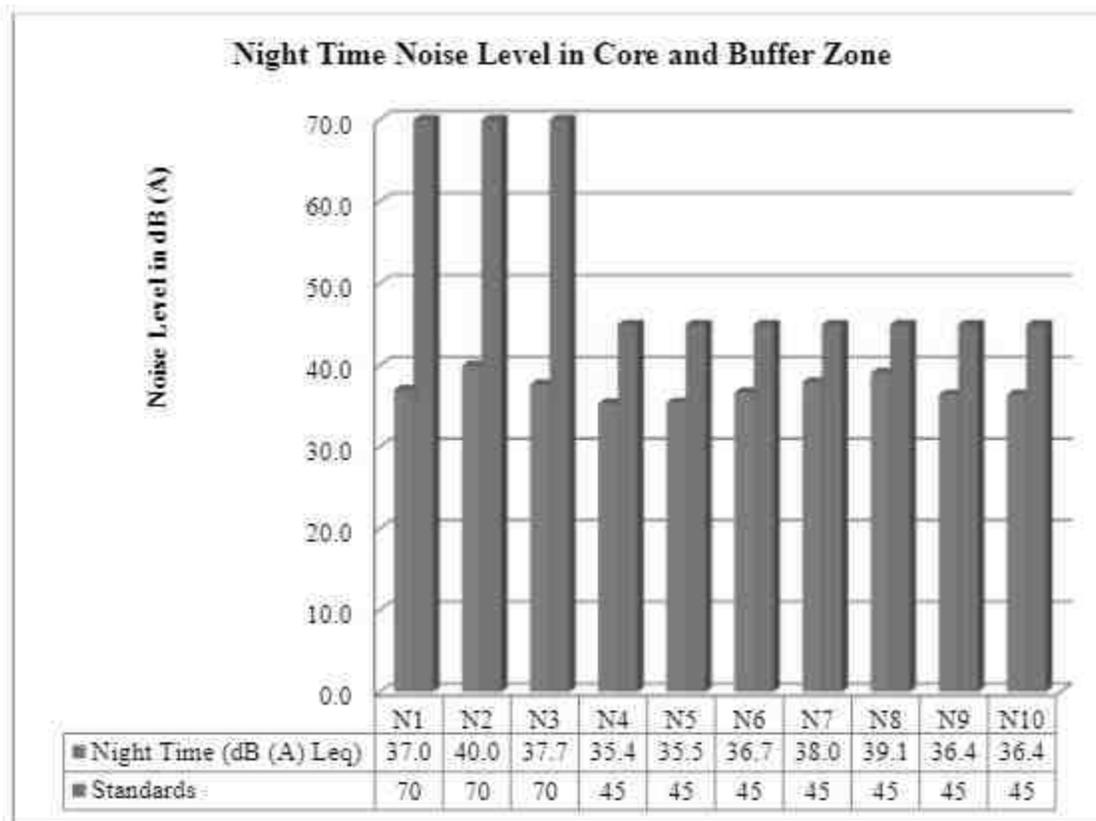
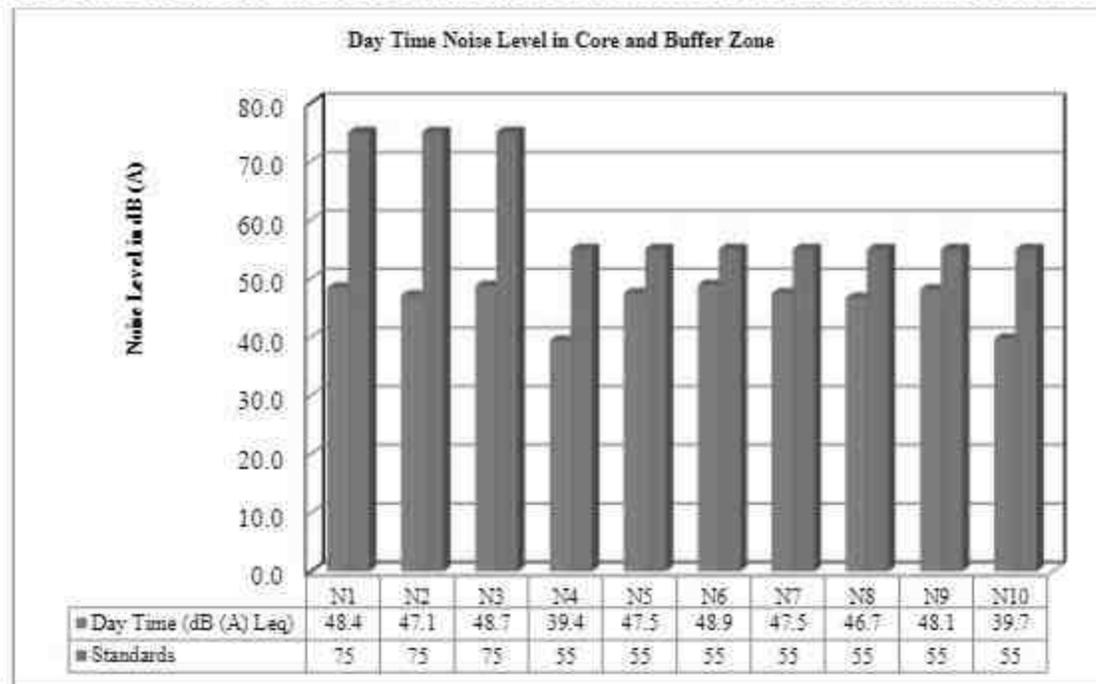


FIGURE 3.16: DAY & NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE

3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 10 (ten) locations around the project area considering cluster quarries. Noise levels recorded in core zone during day time were from 39.4 – 48.4 dB (A) Leq and during night time were from 35.4 – 40.0 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 39.7 – 48.9 dB (A) Leq and during night time were from 35.5 – 39.1 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 48.7 dB(A) in core zone and 39.4 dB(A) in project area and 40.0 dB(A) in Project area & 35.5dB(A) in Project area respectively in night time. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 Ecological Environment

There is no Reserved Forest land, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10km.

An ecological survey of the study area was conducted particularly with reference to the listing of species and assessment of the existing baseline ecological (terrestrial) condition in the study area.

3.5.1 Methodology Adopted & Objective

To achieve the above objective, a detailed study of the area was undertaken in 10 km radius area with the proposed quarry area. The different methods adopted were as follows:

- Primary field surveys to establish primary baseline of the study area; and
 - Compilation of information available in published literatures and as obtained from Forest survey of India, Environmental Information Centre, Botanical Survey of India and Zoological Survey of India.
- The present report gives the review of published secondary data and the results of field sampling conducted during pre-monsoon, 2021 i.e., March to May 2021 and there are no forest blocks in study area

The detailed ecological assessment of the study area has been carried out with the following objectives:

- Identification of flora and fauna within the study area;
- Preparation of checklist of species which also include endangered, endemic and protected (both floral and faunal categories); and
- Evaluation of impact of proposed expansion on flora and fauna of the area

TABLE 3.33 A – FLORA

Sl.No	English Name	Vernacular Name	Scientific Name	Family Name
TREES				
1	Neem or Indian lilac	Vembu	<i>Azadirachta indica</i>	Meliaceae
2	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae
3	Creamy Peacock Flower	Vadanarayani	<i>Delonix elata</i>	Fabaceae
4	Millettia pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
5	Bamboo	Moonghil	<i>Bambusa bambo</i>	Poaceae
6	Indian fig tree	Athi	<i>Ficus recemosa</i>	Moraceae.
7	Gum arabic tree	Karuvclam	<i>Acacia nilotica</i>	Mimosaceae
8	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
9	Asian Palmyra plam	Panai maram	<i>Borassus flabellifer</i>	Arecaceae
10	Indian gooseberry	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae
11	Fragrant manjack	Mukuchalipazham	<i>Cordia dichotoma</i>	Boraginaceae

12	Cannon balltree	Nagalingam	<i>Couroupita guianensis</i>	Lecythidaceae
13	Black plum	Navaimaram	<i>Syzygium cumini</i>	Myrtaceae
14	Beauty leaf	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae
15	Tamarind	Puliyamaram	<i>Tamarindus indica</i>	Legumes
16	Banyan tree	Alamaram	<i>Ficus benghalensis</i>	Moraceae
17	Guava	Koyya	<i>Psidium guajava</i>	Myrtaceae
18	Rain tree	Mazhaimaram	<i>Enterolobium saman</i>	Fabaceae
19	Teak	Thekku	<i>Tectona grandis</i>	Verbenaceae
20	Five leaf chastera	Nochi	<i>Vitex negundo</i>	Lamiaceae
21	Eucalyptus	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae
22	Jack fruit	Palamaram	<i>Artocarpus heterophyllum</i>	Moraceae
23	Henna	Marudaani	<i>Lawsonia inermis</i>	Lythraceae
24	Lemon	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae
25	Papaya	Pappali maram	<i>Carica papaya L</i>	Caricaceae
26	Indian fir tree	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae
27	Acacia Nilotica	Karuvellam maram	<i>Vachellia nilotica</i>	Fabaceae
28	Chinese chaste tree	Nochi	<i>Vitex negundo</i>	Verbenaceae
29	Peepal	Arasanmaram	<i>Ficus religiosa</i>	Moraceae
30	Noni	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae
31	Manilkara zapota	Sapota	<i>Manilkara zapota</i>	Sapotaceae
32	custard apple	Seethapazham	<i>Annona reticulata</i>	Annonaceae
33	Curry tree	Velipparuthi	<i>Murraya koenigii</i>	Asclepiadaceae
34	banana tree	Vazhaimaram	<i>Musa</i>	Musaceae
SHRUBS				
35	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
36	Flame of the Woods	Idlipoo	<i>xoracoc cinea</i>	Rubiaceae
37	Puriging nut	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae
38	Night shade plan	Sundaika	<i>Solanum torvum</i>	Solanaceae
39	Ceylon Date Palm	Icham	<i>Phoenix pusilla</i>	Arecaceae
40	Indian mallow	Thuthi	<i>Abutilon indicum</i>	Meliaceae
41	Shoe flower.	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae
42	Rosary pea	Kundumani	<i>Abrus precatorius</i>	Fabaceae
43	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
44	Indian Oleander	Arali	<i>Nerium indicum</i>	Apocynaceae
45	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae
HERBS				
46	Carrot grass	Partiniyam	<i>Parthenium hysterophorus</i>	Asteraceae
47	Prickly chaff flower	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae
48	Carryme seed	Kilanell	<i>Phyllanthus amarus</i>	Phyllanthaceae
49	Nabhali	Kuthiraikulambadi	<i>Cyanotis cristata</i>	Commelinaceae
50	Benghal dayflower	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae
51	False daisy	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae
52	Indian pennywort	Vallarai	<i>Centella asiatica</i>	Apiaceae
53	Common nut sedge	Korai	<i>Cyperus rotundus</i>	Cyperaceae
54	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae
55	Poor land flatsedg	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae
56	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae

57	Indian Copperleaf	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae
58	Red Hogweed	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae
59	Tridax daisy	Veetukaayapoondu	<i>Tridax procumbens</i>	Asteraceae
60	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
61	European black nightshade	Manathakkali	<i>Solanum nigrum</i>	Solanaceae
62	Ivy gourd	Kovai	<i>Coccoloba grandis</i>	Cucurbitaceae
63	Balloon vine	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae
64	Pointed gourd	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae
64	butterfly pea	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae
68	Bottle Guard	Sorakkai	<i>Lagenaria siceraria</i>	Cucurbitaceae
69	Stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
70	Indian sarsparilla	Nannari	<i>Hemidesmus indicus</i>	Asclepiadaceae
71	Wild water lemon	Sirupunaikkali	<i>Passiflora foetida</i>	Passifloraceae
72	Butterfly-pea	Sangupoo	<i>Clitoria ternatea</i>	Fabaceae
73	Wild jasmine	Malli	<i>Jasminum augustifolium</i>	Oleaceae
74	Purple fruited pea eggplant	Thuthuvelai	<i>Solanum trilobatum</i>	Solanaceae

FIGURE 3.17: FIELD IMAGERY OF FLORA STUDY

TABLE 3.33 B – FAUNA

Sl.No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
2	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
3	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
4	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
5	Jewel beetle	Buprestidae	<i>Eurythya austriaca</i>	Schedule IV	NA
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
8	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	
9	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
10	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
11	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
12	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
13	Lesser grass blue	Lycaenidae	<i>Zizina Otis indica</i>	Schedule IV	LC
14	Blue tiger	Nymphalidae	<i>Trumala limniace</i>	Schedule IV	LC
REPTILES					
15	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
16	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
17	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
18	Fan-Throated Lizard	Agamidae	<i>Sitanaponticertana</i>	NL	LC
19	Common skink	Scincidae	<i>Mabuya carinata</i>	NL	LC
MAMMALS					
20	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
21	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
22	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule II	LC
AVES					
23	Koel	Cuculidae	<i>Eudynamis</i>	Schedule IV	LC
24	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
25	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
26	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
27	Asian green bee-eater	Meropidae	<i>Merops orientalis</i>	NL	LC
28	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	Schedule IV	LC
29	Rose-ringed parakeet	Psittaculidae	<i>Pittacula krameri</i>	NL	LC
30	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
31	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
32	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
33	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
34	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
35	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
36	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
37	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
AMPHIBIANS					

38.	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
39.	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
40.	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigrina)</i>	Schedule IV	LC

3.5.2 Interpretation & Conclusion:

The core zone of the area is patta dry – barren land, no forest land is involved in the project area. The proposed quarry area is covered by thorny bushes and prosopis juliaflora. There is no Wild Life Sanctuary or National Park within the study area of 10km. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.6 Socio Economic Environment

There is no Approved habitation/ village within the radius of 300m from the cluster area. Farm houses, Labour sheds, Mines office and Crusher offices located within 300m radius from the cluster. Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area of the proposed mining project
- To assess the impact of the project on Quality of life of the people in the study area
- To recommend Community Development measures needs to be taken up in the study Area.

3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

3.6.3 Administrative Setup of Coimbatore District

Coimbatore is the third largest city of tamilnadu, Coimbatore is one of the most industrialized cities in Tamil Nadu, known as the textile capital of South India or the Manchester of the South, the city is situated on the banks of the river Noyyal, Coimbatore existed even prior to the 2nd or 3rd century AD ruled by Karikalan, the first of the early Cholas.

There are more than 25,000 small, medium, large sale industries and textile mill. Coimbatore is also famous for the manufacture of motor pump sets and varied engineering goods. The development of Hydro electricity from the Pykara Falls in the 1930 led to a cotton boom in Coimbatore.

Coimbatore serves as an entry and exit point to neighbouring Kerala and the ever-popular hill station of Udhamandalam (Ooty). It is the disembarking point for those who want to take the Mountain train that runs from Mettupalayam, just 35 kms from Coimbatore. There are also regular bus services from Coimbatore to Ooty.

3.6.4 Study area**ARASAMPALAYAM VILLAGE**

Arasampalayam village is situated in Teshil Pollachi, District Coimbatore and in State of Tamil Nadu India. Village has population of 3818 as per census data of 2011, in which male population is 1894 and female population is 1924. Total geographical area of Arasampalayam village is 1270.73 Hectares. Population density of Arasampalayam is 3 persons per Hectares. Total number of house hold in village is 1090. Gram Panchayat name of the Arasampalayam village is Arasampalayam. CD Block name is Kinathukadavu and Teshil/Taluk or sub-district is Pollachi.

- **Sex Ratio of Arasampalayam Village -Census 2011**

As per the Census Data 2011 there are 1016 Femals per 1000 males out of 3818 total population of village. There are 863 girls per 1000 boys under 6 years of age in the village.

- **Literacy of Arasampalayam Village**

Out of total poplation total 2473 people in Arasampalayam Village are literate, among them 1384 are male and 1089 are female in the village. Total literacy rate of of Arasampalayam is 70.26%; for male literacy is 79.82% and for female literacy rate is 60.97%.

- **Worker's profile of Arasampalayam Village**

Total working population of Arasampalayam is 2041 which are either main or marginal workers. Total workers in the village are 2041 out of which 1269 are male and 772 are female. Total main workers are 1863 out of which female main workers are 1166 and male main workers are 697. Total marginal workers of village are 178.

TABLE 3.34: VILLAGE POPULATION FACTS

Village population Facts	Arasampalayam
Number of Households	1090
Population	3818
Male Population	1894
Female Population	1924
Children Population	298
Sex-ratio	1016
Literacy	70.26%
Male Literacy	79.82%
Female Literacy	60.97%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	24.805

Source: <https://etrace.in/census/village/arasampalayam-pollachi-district-coimbatore-tamil-nadu-644475>.

TABLE 3.35: VILLAGE DEMOGRAPHICS POPULATION

Village	Total Population	Male Population	Female Population
Arasampalayam	3818	1894	1924

Source: <https://etrace.in/census/village/arasampalayam-pollachi-district-coimbatore-tamil-nadu-644475>.

TABLE 3.36: VILLAGE 2011 CENSUS DATA

Description	CENSUS 2011 DATA
Village Name	Arasampalayam
Teshil Name	Kinathukadavu
District Name	Coimbatore
State Name	Tamil Nadu
Total Population	3818
Total Area	1271 (Hectares)
Total No of House Holds	1090
Total Male Population	1894
Total Female Population	1924
0-6 Age group Total Population	298
0-6 Age group Male Population	160
0-6 Age group Female Population	138
Total Person Literates	2473
Total Male Literates	1384
Total Female Literates	1089
Total Person Illiterates	1345
Total Male Illiterates	510
Total Female Illiterates	835
Scheduled Cast Persons	947
Scheduled Cast Males	471
Scheduled Cast Females	476
Scheduled Tribe Persons	0
Scheduled Tribe Males	0
Scheduled Tribe Females	0

Source: <https://etrace.in/census/village/arasampalayam-pollachi-district-coimbatore-tamil-nadu-644475>,
<https://www.census2011.co.in/data/village/644389-pachapalayam-tamil-nadu.html>,

TABLE 3.37 – POPULATION CHARACTERISTICS AROUND 10KM RADIUS

Total No of Villages	No. of Households	Total Population	Population Male	Population female	SC Population Male	SC Population female	Total Literates Male	Total Literates Female	Total Illiterates Male	Total Illiterates Female
23	19487	67456	33820	33636	7220	7380	25077	20247	8743	13389
Total Worker Population Male	Total Worker Population Female	Main Working Population Male	Main Working Population Female	Main Cultivator Population Male	Main Cultivator Population Female	Main Agricultural Labourers Population Male	Main Agricultural Labourers Population Female	Non Working Population Male	Non-Working Population Female	
22409	13146	20663	10785	4239	2456	4427	4411	11411	20490	

3.6.5 Basic Amenities

A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz., health and education, water and sanitation, veterinary services and co-operative) is essential for development of the rural economy.

A review of infrastructure facilities available in the area has been given on the basis of field survey. In this study the villages which fall within 10 km radius around the site has been covered. Infrastructure facilities

available in the area are presented below. All basic amenities Education (higher education, colleges, universities, medical college, Transport facilities, Railway station, Bus station area available in the district headquarters: Coimbatore at a distance of 16km – Northwest).

Apart from the secondary sources Sample survey taken very nearer to the project site in the farm houses, and

Individual farm houses within 100m radius from the project site

S.No	Name of the respondent	Members	Home type	Occupation	Remarks
1	Palanisamy	5	Brick & concrete house with sheet	Farmer	No issues about this project
2	Aaruchamy	3	Hut & brick	Farmer & daily wages / worker	Supporting this project
3	Kumar	2	Tiled & brick	Daily wages / worker	Supporting this project
4	Karuppasamy	4	Tiled & brick	Farmer	Supporting this project
5	Selvaraj	4	Hut & stone	Daily wages / worker	No issues about this project

Individual houses within 100m – 200m radius from the project site

FIGURE 3.18: FIELD IMAGERY OF SOCIO ECONOMIC STUDY





3.6.6 Recommendation and Suggestion

- Awareness program should be conducted to make the population aware to get education and a better livelihood
- Health care centre and ambulance facility can be provided to the population to get easy and accessible medical facilities
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth
- On the basis of qualification and skills local youths may be employed.
- Long term and short-term employments can be generated
- Maternity facility should be made available at the place to avoid going too far off places for treatment which involves risks. Apart from that as these areas are prone to various diseases a hospital with modern facilities should be opened on a priority basis in a central place to provide better health facilities to the villagers around the project.
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

3.6.7 Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve. The nearby villages within 5kms radius have PHC, Anganwadi school, Post office, Telegram, Government and Private school, bus connectivity besides.

CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 General

The environmental impact can be categorized as either primary or secondary, primary impacts which are attributed directly by the project; secondary impacts are those which are indirectly induced. The open cast mining operations involve development of benches, Approach Road, Haul Road, Excavation and handling of material. If adequate control measures are not taken to prevent/mitigate the adverse environmental impacts lead to damage of the eco-system.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans for sustainable resource extraction. Based on the baseline environmental status at the existing mine site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed. The various anticipated impacts will be on

- Land environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Solid waste
- Soil environment

In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.

Whereas, this mining activity is restricted to a small scale mining and the proposal falls in "B1" Category, the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.

- The mine pit shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change

4.1 Land Environment

4.1.2 Anticipated Impact from Proposed Project

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

- Impact due to heritage site, Archaeological sites

4.1.2.1 Common Mitigation Measures for Proposed Project

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.
- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle
- There are no Archaeological sites, heritage site in the vicinity of the project area, the topography will be changed due to excavation of rough stone and Gravel.

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

The top layer of the project site in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into dumpers to the needy customers.

There will be no disposal of waste water from the quarry operation, No discharge of toxic effluent from the proposed projects. The dust emission at working face and haul roads will be controlled by water sprinkling and plantation.

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

4.1.5 Common Mitigation Measures

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.1.6 Waste Dump Management

There are no wastages anticipated in this rough stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%). The overburden in the form of gravel formation the gravel will be also sold to needy customers for the filling and levelling of low-lying areas.

4.2 Water Environment

4.2.1 Anticipated Impact on Surface and ground water

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry is 27m and water table is found at 70m in summer season and 65m in rainy season.

The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc.) in the project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.

TABLE 4.1: WATER REQUIREMENTS

*Purpose	Quantity	Source
Dust Suppression	0.3 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Green Belt development	0.5 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Domestic purpose	0.4 KLD	Water Tankers
Total	1.2 KLD	

* Water for drinking purpose will be brought from approved water vendors

Source: Approved Mining Plan Pre-Feasibility Report

Total water requirement in the proposed project is about 1.2 KLD, the water for dust suppression and greenbelt development will be sourced from the mine pit water collected during rainy seasons, the water for domestic purpose and drinking will be sourced from the approved water vendors.

4.2.2 Common Mitigation measures:

- Garland drains, settling tank will be constructed along the mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.

- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.
- Regular monitoring (every 6 month once) and analysing the quality of water in open well, bore wells and surface water.

Possibilities of water contamination and impact on an aquatic ecosystem health

- Anticipated impact from this proposed mining activity is surface runoff from cleared surfaces, or discharges from the quarry pit or floor, is likely to have elevated levels of sediment (both suspended and dissolved). The quality of the water discharged from the site can have impacts on downstream ecological communities and water users.
- Therefore, Run-off diversion is proposed – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion with only clear water after the garland drains are enrooted through settlement traps.
- And, the depth of the mining is maximum 47m bgl and the ground water level in the surrounding areas is about 65-70 m bgl and there are no possibilities of encountering any ground water aquifers system and hence no ground water table intersection is anticipated.
- After the completion of quarry operation, the quarried out open pit mine may utilized for pisci-culture or temporary reservoir pit for use of water for domestic purpose during dry seasons.
- Therefore, its inferred that the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the possibilities of water contamination and impact on an aquatic ecosystem health.

4.3 Air Environment

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out by jackhammer drilling (35mm dia) and Hydraulic Excavators will be utilized for excavation of Rough Stone waste.

4.3.1. Anticipated

Impact

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.3.1.1. Modelling of Incremental Concentration from Proposed Project

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation and transportation are mainly PM₁₀ & PM_{2.5} and emissions of Sulphur dioxide (SO₂) & Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using AERMOD Software.

The impact on Air Environment is due to the mining and allied activities during Land Development phase, Mining process and Transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration cumulative production three proposed quarries. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.1.2 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER = overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

TABLE 4.2: ESTIMATED EMISSION RATE FOR PROPOSED PROJECT

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	Point Source	0.048038758	g/s
	Blasting	Point Source	0.000061883	g/s
	Mineral Loading	Point Source	0.035273860	g/s
	Haul Road	Line Source	0.002483719	g/s/m
	Overall Mine	Area Source	0.042499689	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000101539	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000003071	g/s

4.3.2 Frame work of Computation & Model details

The prediction included the impact of Excavation, Drilling, Blasting, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM₁₀ was observed close to the source due to low to moderate wind speeds. Incremental value of PM₁₀ was

superimposed on the base line data monitored at the proposed site to predict total GLC of PM₁₀ due to combined impacts.

Air Pollution Dispersion Modelling.

Baseline Air Quality –

Baseline air quality has been measured at 4 locations in the cluster and 6 locations within the buffer zone of the study area. The 24 - hourly average samples of particulate matters (PM₁₀ and PM_{2.5}), SO₂ and NO_x were measured following the National Ambient Air Quality Standards (NAAQS), 2009. Monitoring data of 7 sampling stations are given below –

Meteorological Data –

Meteorology is the key to understand the air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site and monitored continually for study period without break. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis. A weather data was collected from IMD, Coimbatore agro for the month of March 2021 – May 2021 to correlate with site data and found not much of change in the parameters.

FIGURE 4.1: AERMOD TERRAIN MAP

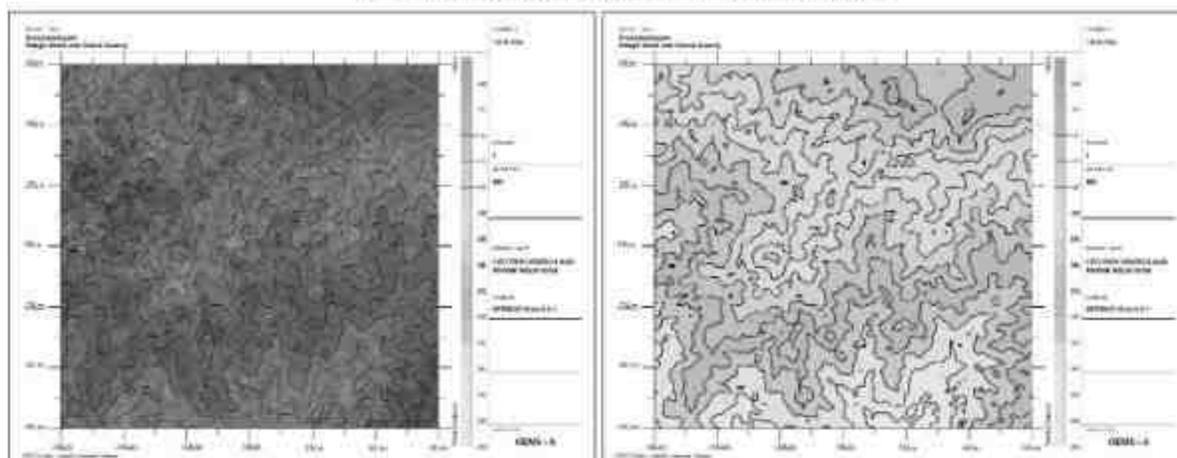


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

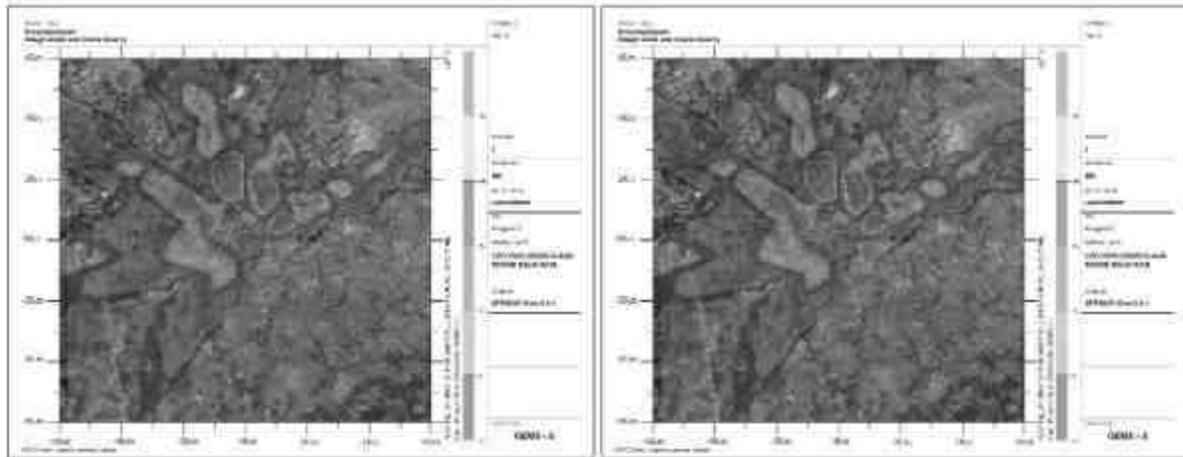


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF SO₂

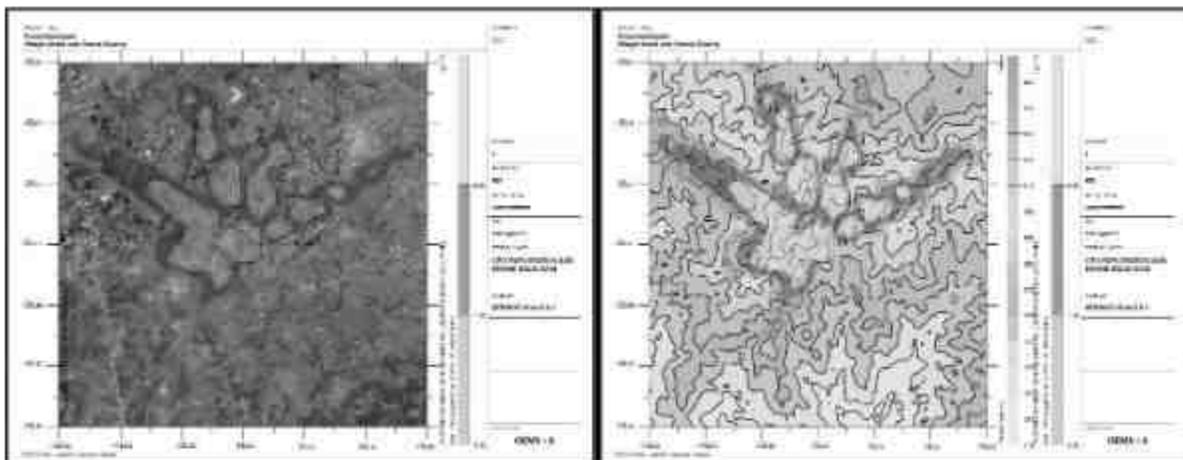
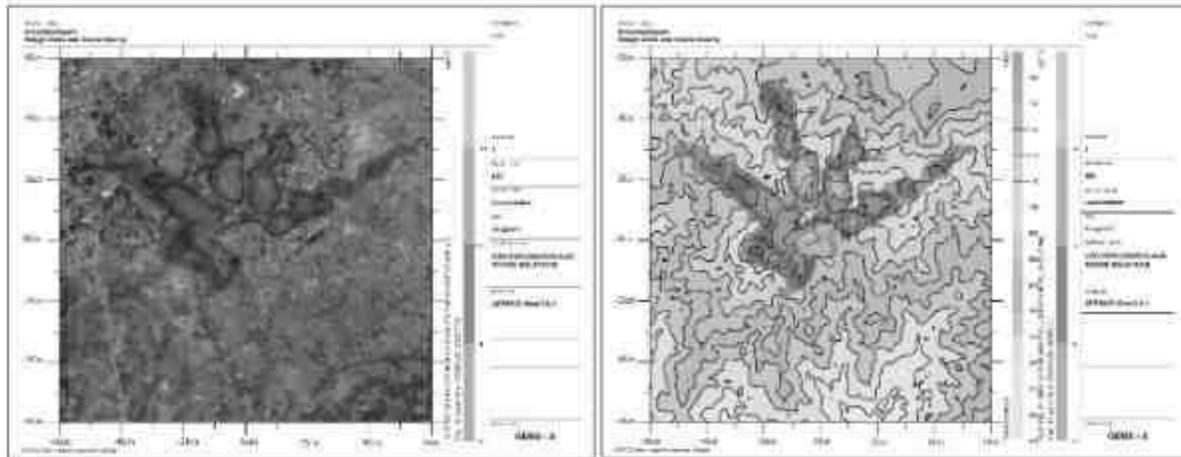
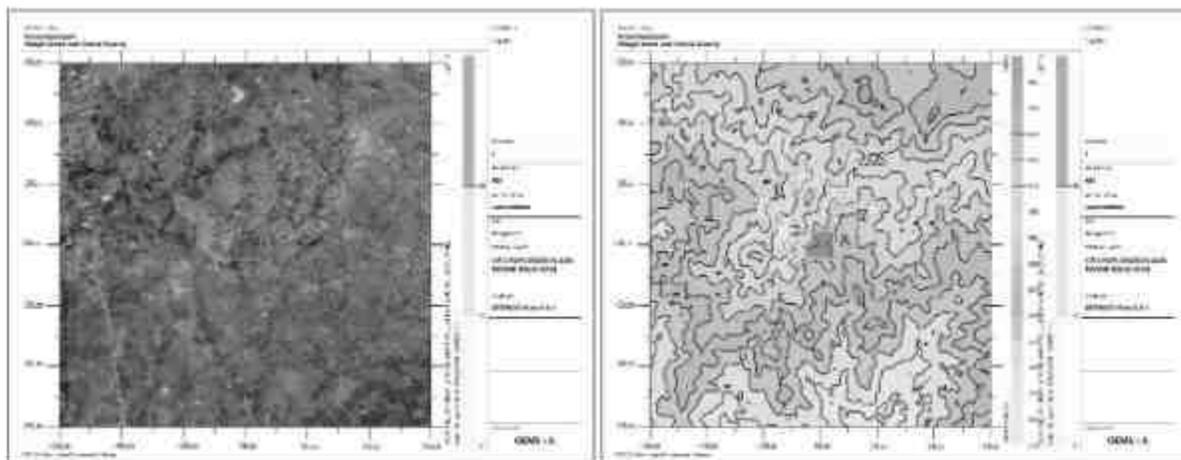


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO_x**FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST**

4.3.2.1 Model Results

The post project Resultant Concentrations of PM₁₀, PM_{2.5}, SO₂ & NO_x (GLC) is given in Table below:

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³) (5+6)
AAQ1	10°52'42.59"N 77° 3'11.73"E	-64	57	43.5	19.96	63.46
AAQ2	10°52'55.94"N 77° 3'5.43"E	-259	471	42.4	19.42	61.82
AAQ3	10°52'49.17"N 77° 2'45.99"E	-853	257	45.1	19.16	64.26
AAQ4	10°52'35.64"N 77° 2'44.49"E	-897	-162	42.3	19.76	62.06
AAQ5	10°54'14.41"N 77° 0'49.53"E	-4407	2895	43.3	14.98	58.25
AAQ6	10°52'47.91"N 77° 0'41.58"E	-4652	224	42.7	6.87	49.57
AAQ7	10°55'1.47"N 77° 2'51.18"E	-695	4340	42.7	11.15	49.57
AAQ8	10°50'21.48"N 77° 4'56.52"E	-3135	-4308	43.2	0	43.2
AAQ9	10°50'54.42"N 77° 2'29.15"E	-1365	-3288	42.3	2.11	44.41
AAQ10	10°53'30.52"N 77° 5'49.82"E	4765	1537	43.1	0	43.1

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM_{2.5}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³) (5+6)
AAQ1	10°52'42.59"N 77° 3'11.73"E	-64	57	23.3	11.92	35.22
AAQ2	10°52'55.94"N 77° 3'5.43"E	-259	471	21.7	11.53	33.23
AAQ3	10°52'49.17"N 77° 2'45.99"E	-853	257	25.3	11.19	36.49
AAQ4	10°52'35.64"N 77° 2'44.49"E	-897	-162	22.6	11.71	34.31
AAQ5	10°54'14.41"N 77° 0'49.53"E	-4407	2895	24.2	10.24	34.44
AAQ6	10°52'47.91"N 77° 0'41.58"E	-4652	224	23.5	6.31	29.81
AAQ7	10°55'1.47"N 77° 2'51.18"E	-695	4340	23.1	8.13	31.23
AAQ8	10°50'21.48"N 77° 4'56.52"E	3135	-4308	20.9	0	20.9
AAQ9	10°50'54.42"N 77° 2'29.15"E	-1365	-3288	22.5	4.01	26.51
AAQ10	10°53'30.52"N 77° 5'49.82"E	4765	1537	22.4	1.65	24.05

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline So ₂ (µg/m ³)	Incremental value of So ₂ due to mining (µg/m ³)	Total So ₂ (µg/m ³) (5+6)
AAQ1	10°52'42.59"N 77° 3'11.73"E	-64	57	9.6	3.69	13.29
AAQ2	10°52'55.94"N 77° 3'5.43"E	-259	471	8.7	3.63	12.33
AAQ3	10°52'49.17"N 77° 2'45.99"E	-853	257	7.6	3.60	11.2
AAQ4	10°52'35.64"N 77° 2'44.49"E	-897	-162	7.2	3.67	10.87
AAQ5	10°54'14.41"N 77° 0'49.53"E	-4407	2895	6.7	2.52	9.22
AAQ6	10°52'47.91"N 77° 0'41.58"E	-4652	224	7.1	0	7.1
AAQ7	10°55'1.47"N 77° 2'51.18"E	-695	4340	5.9	0.95	6.85
AAQ8	10°50'21.48"N 77° 4'56.52"E	3135	-4308	6.6	0	6.6
AAQ9	10°50'54.42"N 77° 2'29.15"E	-1365	-3288	7.2	0	7.2
AAQ10	10°53'30.52"N 77° 5'49.82"E	4765	1537	5.5	0	5.5

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline No _x (µg/m ³)	Incremental value of No _x due to mining (µg/m ³)	Total No _x (µg/m ³) (5+6)
AAQ1	10°52'42.59"N 77° 3'11.73"E	-64	57	25.0	13.87	38.87
AAQ2	10°52'55.94"N 77° 3'5.43"E	-259	471	22.4	11.98	34.38
AAQ3	10°52'49.17"N 77° 2'45.99"E	-853	257	26.0	9.79	35.79
AAQ4	10°52'35.64"N 77° 2'44.49"E	-897	-162	23.0	13.20	36.2
AAQ5	10°54'14.41"N 77° 0'49.53"E	-4407	2895	23.6	2.58	26.18
AAQ6	10°52'47.91"N 77° 0'41.58"E	-4652	224	22.4	0	22.4
AAQ7	10°55'1.47"N 77° 2'51.18"E	-695	4340	22.6	0	22.6
AAQ8	10°50'21.48"N 77° 4'56.52"E	3135	-4308	23.0	0	23.0
AAQ9	10°50'54.42"N 77° 2'29.15"E	-1365	-3288	24.2	0	24.2
AAQ10	10°53'30.52"N 77° 5'49.82"E	4765	1537	20.3	0	20.3

TABLE 4.7: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Fugitive (µg/m ³)	Incremental value of Fugitive due to mining (µg/m ³)	Total Fugitive (µg/m ³) (5+6)
AAQ1	10°52'42.59"N 77° 3'11.73"E	-64	57	63.6	36.25	99.85
AAQ2	10°52'55.94"N 77° 3'5.43"E	-259	471	63.0	15.33	78.33
AAQ3	10°52'49.17"N 77° 2'45.99"E	-853	257	64.3	10.07	74.37
AAQ4	10°52'35.64"N 77° 2'44.49"E	-897	-162	62.8	24.18	86.98
AAQ5	10°54'14.41"N 77° 0'49.53"E	-4407	2895	63.8	0	63.8
AAQ6	10°52'47.91"N 77° 0'41.58"E	-4652	224	62.9	0	62.9
AAQ7	10°55'1.47"N 77° 2'51.18"E	-695	4340	62.8	0	62.8
AAQ8	10°50'21.48"N 77° 4'56.52"E	3135	-4308	61.3	0	61.3
AAQ9	10°50'54.42"N 77° 2'29.15"E	-1365	-3288	62.7	0	62.7
AAQ10	10°53'30.52"N 77° 5'49.82"E	4765	1537	57.0	0	57.0

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80 $\mu\text{g}/\text{m}^3$ for PM_{10} , SO_2 & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Common Mitigation

Drilling – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

Advantages of Wet Drilling: -

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face.
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas.
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

Haul Road & Transportation –

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

Occupational Health –

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

Climatic Changes:

- In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.
- Whereas, this proposed mining activity is restricted to a small scale mining the proposals falls in a cluster situation where the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.
- The project area's proposed with land use type of patta land for mining with 5 m height bench with 5 m width bench and Pollution Under Control Certified Machineries is proposed for wining of mineral by opencast mechanized mining method and water consumption are proposed with water tankers from nearby areas and the mine pit itself shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary @ 4,700 Nos of trees, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change leading Droughts and Floods etc.,

4.4 Noise Environment (Impact & Mitigation Measures)

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering blasting and compressor operation (Drilling) and transportation activities:

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

Lp_1 & Lp_2 are sound levels at points located at distances r_1 & r_2 from the source.

$Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

4.4.1 Anticipated Impact

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

TABLE 4.8: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total Noise Produced			95.8

*50 feet from source = 15.24 meters

Source: U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for noise prediction modelling.

TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
Maximum Monitored Value (Day) dB(A)	55.3	54.5	55.3	46.5	51.8	57.6	54.7	53.5	57.1	45.9
Incremental Value dB(A)	42.8	46.7	48.7	41.0	44.5	44.5	46.1	42.4	45.0	46.5
Total Predicted Noise level dB(A)	53.7	53.4	53.9	47.6	52.5	53.2	52.5	53.8	52.9	49.2
NAAQ Standards	Industrial		Day Time- 75 dB (A)			Night Time- 70 dB (A)				
	Residential		Day Time- 55 dB (A)			Night Time- 45 dB (A)				

4.4.2 Common Mitigation Measures

The following noise mitigation measures are proposed for control of Noise.

- Time intervals for each quarry during blasting.
- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Limiting time exposure of workers to excessive noise.
- Proper and regular maintenance of vehicles, machinery and other equipment's.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment's.
- Speed of trucks entering or leaving the quarry will be limited to moderate speed to prevent undue noise from empty vehicles.
- Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes (occasionally).
- Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment.
- Provision of Quiet areas, where employees can get relief from workplace noise.
- The development of green belts around the periphery of the quarry site to attenuate noise.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

4.4.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the project area is located 1km Southeast in Karacheri village. The ground vibrations due to the blasting in proposed mine are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where -

V = peak particle velocity (mm/s)

K = site and rock factor constant

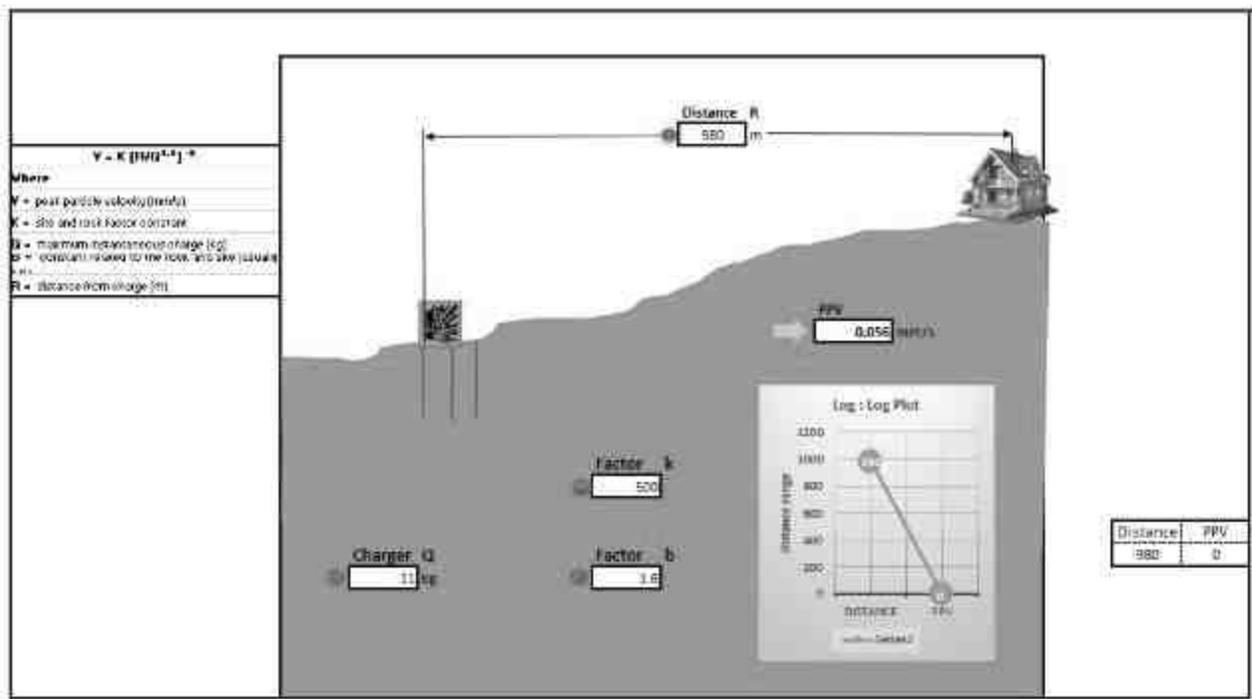
Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	11	980	0.056



From the above graph, the Maximum charge per blast of 11Kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. It is proposed to carry out blasting not exceeding 2kg of Explosives per one blasting round. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Common Mitigation Measures for Respective Individual Proposed Project

- The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;

- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.5 *Ecology and Biodiversity*

4.5.1 Impact on Ecology and Biodiversity

There are no migratory corridors, migratory Avian-Fauna, Rare endemic, endangered species and wild animals in the area. No breeding and nesting site were identified in project site. No National Park and Wildlife Sanctuary found within 10km radius.

The cluster quarry area is dry barren land and devoid of plantation, the area is surround by seasonal agriculture lands, Existing Rough stone quarries and crushers hence no requirement for the uprooting of trees due to this quarry project.

Barbed wire fencing will be constructed around the project area to prevent the entry of cattles. In the post mining stage, fencing is proposed constructed all around the mined-out void to prevent fall of animals in the mine pits. No medicinal plant identified in core and buffer area.

The fauna in the vicinity of the project site is restricted to few common small species. There will be no impact on fauna due to this quarry project. Even though there are no impact on bio diversity and flora/fauna status due to project operations, positive impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with elaborately planned green belt development activities and along with creation of water resources in the working pits.

4.5.2 Common Mitigation Measures for Respective Proposed Project

Keeping all this in mind the mitigations have been suggested under environmental management plan. With the understanding of the role of plant species as bio-filter to control air pollution, appropriate plant species (mainly tree species) have been suggested conceding the area/site requirements and needed performance of specific species. The details of year wise proposed plantation program are given in Table 4.13.

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed areas falls in the cluster earmarked for plantation program as per Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone.

The objectives of the green belt cover will cover the following:

- Noise abatement
- Ecological restoration.
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

4.5.2.2.1. Species Recommendation for Plantation granted in the district

Following points have been considered while recommending the species for plantation:

- Natural growth of existing species and survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- Creating of biodiversity.
- Fast growing, thick canopy copy, perennial and evergreen large leaf area.
- Efficient in absorbing pollutants without major effects of natural growth.
- The following species may be considering primary for plantation best suited for the prevailing climate condition in the area.

TABLE 4.11: RECOMMENDED TREES FOR GREENBELT DEVELOPMENT PLAN

Sl.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	<i>Aegle marmelos</i>	Rutaceae	Neem, Vembu	Tree
2	<i>Albiziafalcataria</i>	Fabaceae	Tamarind, Puliyamaram	Tree
3	<i>Polyalthialongifolia</i>	Annonaceae	Kattumaram	Tree
4	<i>Borassus Flabellifer</i>	Arecaceae	Palmyra Palm	Tree
5	<i>Cassi roxburghii</i>	Fabaceae	Sengondrai	Tree
6	<i>Terminalia bellerica</i>	Combretaceae	Thandri	Tree
7	<i>Syzygium cumini</i>	Myrtaceae	Naval	Tree

The 7.5m, 10m and 50m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata will be planted along the Lease boundary. The rate of survival expected to be 80% in this area. Greenbelt development Plan is given in Table No.4.13 and budget of green belt development plan are given in Table No.4.14.

TABLE 4.12: GREENBELT DEVELOPMENT PLAN

PROPOSAL FOR P1 – Tmt. S.Manonmani				
Year	No. of trees proposed to be planted	Survial %	Area to be planted	Name of the species
I	It is proposed to plant 780 Nos of trees in the 1 st year	80 %	7.5m Safety barrier, Panchayat road and nearby village roads	Neem, Pungam, Sengondrai, Panai, Naval

TABLE 4.13: BUDGET FOR GREEBELT DEVELOPMENT PLAN

ACTIVITY		YEAR					RATE	COST (Rs.)
		I	II	III	IV	V		
Plantation under safety zone	Nos.	32	32	32	32	32	@100 Rs	16,000/-
	Cost	3200	3200	3200	3200	3200		
Plantation in the approach road and nearby village roads	Nos.	20	20	20	20	20	Per sapling	10,000/-
	Cost	2000	2000	2000	2000	2000		
Wire Fencing (In Mtrs) 520 Mtrs		156000	-	-	-	-	@300 Rs Per Meter	1,56,000/-
Garland drain (In Mtrs) 260 Mtrs		78000	-	-	-	-	@300 Rs Per Meter	78,000/-
TOTAL								2,60,000/-

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

4.5.3. Anticipated Impact on Fauna

- There is no Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site.
- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around all the proposed mine lease areas will be constructed to restrict the entry of stray animals
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.5.3.1. Measures for protection and conservation of wildlife species

- Undertaking mitigative measures for conducive environment to the flora and fauna in consultation with Forest Department.
- Dust suppression system will be installed within mine and periphery of mine for all proposed projects.
- Plantation around mine area will help in creating habitats for small faunal species and to create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

4.5.3.2. Mitigation Measures

- All the preventive measures will be taken for growth & development of fauna.
- Creating and development awareness for nature and wildlife in the adjoin villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.

4.5.4. Impact on Aquatic Biodiversity

Mining activities will not disturb the existing aquatic ecology as there is no effluent discharge proposed from the rough stone and gravel quarry. There is no natural perennial surface water body within the mine lease area. Hence, aquatic biodiversity is not observed in the mine lease area.

4.5.5. Impact Assessment on Biological Environment

A detail of impact and assessments was mentioned in Table No 4.15.

TABLE 4.14: ECOLOGICAL IMPACT ASSESSMENTS

SLNo	Attributes	Assessment
1	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/coastline/estuary/sea	NO Reserve Forest within 10 km Radius.
2	Proposed mining project impact surface water quality that also provide water to wildlife.	'NO' scheduled or threatened wildlife animal sighted regularly core in core area.
3	Located near an area populated by rare or endangered species	NO endangered, critically endangered, vulnerable species sighted in core mining lease area.
4	Proposed project restricts access to waterholes for wildlife	'NO'
5	Project likely to affect migration routes	'NO' migration route observed during monitoring period.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management such as garland drains is proposed to be constructed, so there will be no siltation nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	'NO'
8	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in mining lease site. The fauna sighted mostly migrated from buffer area.
9	Mining project effect the forest-based livelihood/ any specific forest product on which local livelihood depended	'NO'
10	The project release effluents into a water body that also supplies water to a wildlife	No water body near to core zone so chances of water become polluted is low.
11	The project likely to affect wetlands, Fish breeding grounds, marine ecology	'NO'. Wetland was not present in near core Mining lease area. No breeding and nesting ground present in core mining area.

12	Project likely to affect flora of an area, which have medicinal value	'NO'
13	Forestland is to be diverted, has carbon high sequestration	'NO' There was no forest land diverted.

TABLE 4.15: ANTICIPATED IMPACT OF ECOLOGY AND BIODIVERSITY

Sl. No	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence - Probability Description / Justification	Significance	Mitigation Measures
Pre-Mining Phase					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity (Direct impact)	Site possesses common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However, Greenbelt plantation will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So, there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form Unique / critical habitat structure for unique flora or fauna.		
Mining phase					
2	Excavation of mineral using machine and labours, Transportation activities will generate noise.	Site-specific disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM. Excavation of dump and transportation work should stop before 7PM.
3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO ₂ ,NO ₂ ,CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantation has been suggested Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.

4.6 *Socio Economic*

4.6.1 Anticipated Impact from Proposed Project

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region
- Due to the increase in the number of vehicles, traffic jams may occur
- Due to the vehicles passing through the villages, there is a disturbance to the people

4.6.2 Common Mitigation Measures for Proposed Project

- Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area
- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not allowed during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

4.7 *Occupational Health and Safety*

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- Respiratory hazards
- Noise
- Physical hazards
- Explosive storage and handling

4.7.1 Respiratory Hazards

Long-term exposure to silica dust may cause silicosis the following measures are proposed:

- Cabins of excavators and tippers will be enclosed with AC and sound proof
- Use of personal dust masks will be made compulsory

4.7.2 Noise

Workers are likely to get exposed to excessive noise levels during mining activities. The following measures are proposed for implementation

- No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)
- Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- Periodic medical hearing checks will be performed on workers exposed to high noise levels.

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.8 *Mine Waste Management*

No waste is anticipated from any of the proposed quarry.

4.9 *Mine Closure*

Mine closure plan is the most important environmental requirement in mining projects. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project. Therefore, progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To create a productive and sustainable after-use for the site, acceptable to mine owners and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

4.9.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharge likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

4.9.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

- Where the nutrient level of spread topsoil is lower than material in-situ e.g. for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g. planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g. development of green barriers

The Mine closure plan should be as per the approved mining plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

CHAPTER – 5: ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 Introduction:

Consideration of alternatives to a project proposal is a requirement of EIA process. This quarry is site specific. The site has been selected based on geological investigation and exploration and from the Existing quarry pits around the project site. Drilling, Blasting, Excavation, Loading & Transportation will be carried out in this quarrying operation.

- This area denotes the indicative of flow pattern of the rock mass in N30°E to S30°W with dipping SE60°.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility.
- Socio – economic background.

Enough infrastructure exists and lesser resources are required to be deployed. Since, any major construction for infrastructure is not required and hence does not affect the environment considerably.

5.1 Factors Behind the Selection of Project Site

Rough Stone and Gravel Quarry Projects at Arasampalayam Villages is a site specific. The proposed mining lease area has following advantages: -

- The mineral deposit occurs in a non-forest area.
- There is no habitation within the project area; hence no R & R issues exist.
- There is no river, stream, nallah and water bodies within the project areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, fire-fighting, education, transportation, communication and infrastructural facilities are well connected and accessible.
- The mining operations will not intersect the ground water level. Hence, no impact on ground water environment.
- Study area falls in seismic zone – III, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

5.2 Analysis of Alternative Site

The mineral deposits are site specific in nature; hence, question of seeking alternate site does not arise for this project.

5.3 Factors Behind Selection of Proposed Technology

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone and Gravel in the area. The quarry areas fall in the clusters has following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working out deposit is preferred over underground method.
- The material will be loaded after sprinkling with water with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.

Semi skilled labours fit for quarrying operations are easily available around the nearby villages.

5.4 Analysis of Alternative Technology

Open cast mechanized method has been selected for this project. This technology is having least gestation period, economically viable, safest and less labour intensive. The method has inbuilt flexibility for increasing or decreasing the production as per market condition.

CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

6.0 *General*

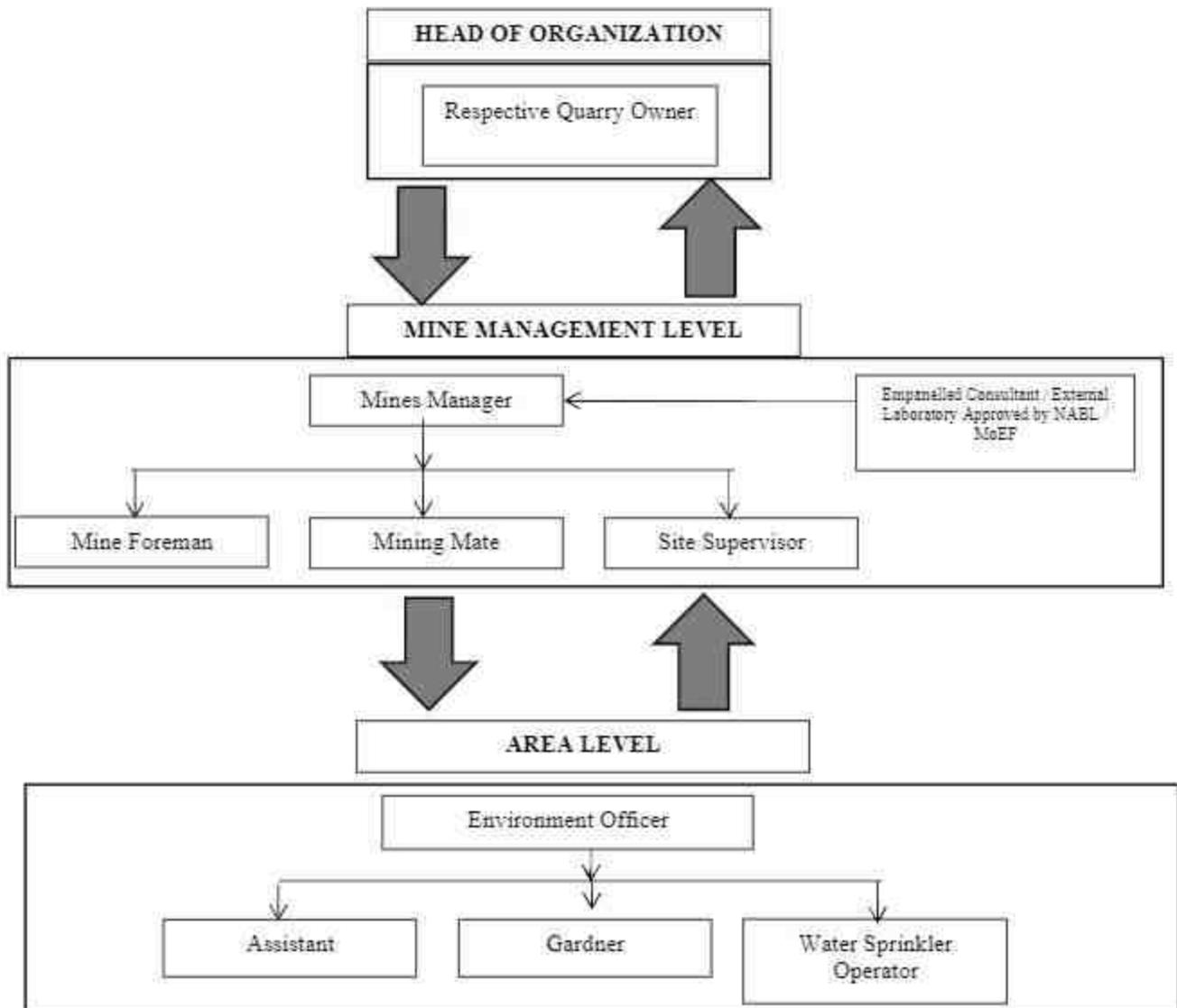
Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF & Consent to Operate issued by the State Pollution Control Board. Monitoring reports will be submitted to regulator as per statutory requirements. The entire monitoring work will be carried out by MoEF & CC / NABL recognized laboratories.

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections.

6.1 *Methodology of Monitoring Mechanism*

Implementation of EMP and periodic monitoring will be carried out by the proponents and respective quarry owners in the cluster quarries. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed project, Mine Management Level environmental protection measures like dust suppression, treatment and recycling of waste water, control of noise due to blasting and Ground vibration, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of other hand, implementation of area level protection measures like plantation and green Environmental Management Plan and environmental clearance conditions will be monitored by the proponent. On the belt development, environmental quality monitoring etc.,

An environment monitoring cell (EMC) will be constituted at the quarry consisting of following members to monitor the implementation of EMP and other environmental protection measures.

FIGURE 6.1 ENVIRONMENTAL MONITORING CELL

The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies. The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of monthly, half-yearly and yearly. The half-yearly reports will be submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well.

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

6.2 Implementation Schedule of Mitigation Measures

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

TABLE 6.1 IMPLEMENTATION SCHEDULE

Sl No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of the project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of the project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 Monitoring Schedule and Frequency

The environmental monitoring will be conducted in the mine operations as follows:

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM _{2.5} , PM ₁₀ , SO ₂ and NO _x
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	-	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	-	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010.

6.4 Environmental Policy of the Proponents

The project proponents in the proposed quarries are committed to ensure that:

- Protect the environment by control and prevention of pollution and promote green environment.
- To operate the quarry with an objective of no injuries and accidents at the work place and provide a safe work place for our employees, contractors and others who perform their duties.
- Adequate health care will be taken to all the employees and create process to reduce the adverse effect of the operations on Health of the employees.
- Provide safety appliance and continuous training in safety to employees to ensure safe production and achieve the target of zero accidents.
- Develop safe working methods and practices, remove unsafe work conditions and consider all the aspects at the early stages of process development to provide safe working atmosphere.
- Communicate Safety, Health and Environmental Policy to all employees for better understanding and practice.

6.5 Budgetary Provision for Environmental Monitoring Programme

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed total cost for Environmental Monitoring Programme for one proposed quarry for the mining plan period is Rs 3,80,000/-.

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Parameter	Sl.Nos	Capital Cost
Air Quality Meteorology Water Quality Hydrology Soil Quality Noise Quality Vibration Study Greenbelt	P1	Rs.3,80,000/-
TOTAL		Rs. 3,80,000/-

Source: Approved Mining Plans

6.6 Reporting Schedules of Monitored Data

The monitored data on Air quality, Water quality, Noise levels and other environmental attributes will be periodically examined by the proponent with Environmental Monitoring cell and necessary corrective measures will be carried out. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

- MoEF & CC – Half yearly status report
- TNPCB - Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports
- SEIAA, Chennai, Tamil Nadu

Besides the Mines Manager/Agent will submit the periodical reports to –

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

CHAPTER – 7: ADDITIONAL STUDIES

7.0 General

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

7.1. Public Consultation:

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

7.2 Risk Assessment

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The cluster quarry operation will be carried out under the direction of a Qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.1 RISK ASSESSMENT & CONTROL MEASURES

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	<ul style="list-style-type: none"> ▪ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; ▪ Entry of unauthorized persons will be prohibited; ▪ Fire fighting and first-aid provisions in the mine office complex and mining area; ▪ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ▪ Working of quarry, as per approved plans

			<p>and regularly updating the mine plans;</p> <ul style="list-style-type: none"> ▪ Cleaning of mine faces shall be daily done in order to avoid any overhang or undercut; ▪ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; ▪ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling & Blasting	<p>Due to improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p>	<ul style="list-style-type: none"> ▪ Safe operating procedure established for drilling (SOP) will be strictly followed. ▪ Only trained operators will be deployed. ▪ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ▪ Drilling shall not be carried on simultaneously on the benches at places directly one above the other. ▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ▪ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. ▪ Operator shall regularly use all the personal protective equipment.
3	Blasting	<p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming & Blasting/fining of blast holes</p> <p>Vibration due to movement of vehicles</p>	<ul style="list-style-type: none"> ▪ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast can be conducted safely. ▪ SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation ▪ Shots are fired during daytime only. ▪ All holes charged on any one day shall be fired on the same day. ▪ The danger zone is and will be distinctly demarcated (by means of red flags)
4	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p>	<ul style="list-style-type: none"> ▪ Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in

		While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	good condition. <ul style="list-style-type: none"> Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. Concave mirrors should be kept at all corners. All vehicles should be fitted with reverse horn with one spotter at every tipping point Loading according to the vehicle capacity Periodical maintenance of vehicles as per operator manual
5	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

7.3 Disaster Management Plan

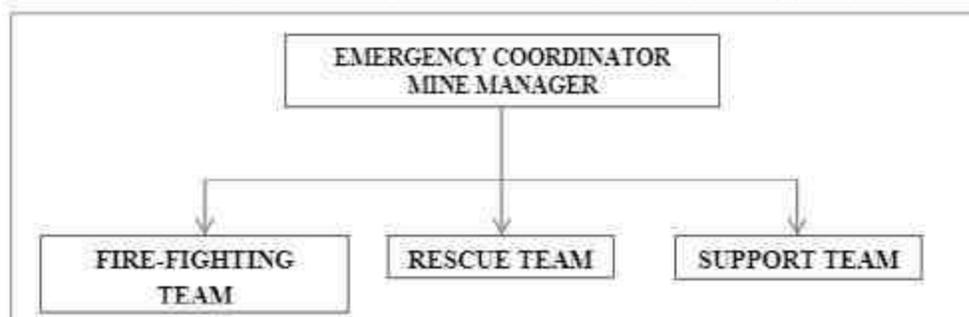
Natural disasters like Earthquake, Land slides has not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

DESIGNATION	QUALIFICATION
FIRE-FIGHTING TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member	Mines Foreman
Team Member	Mining Mate
RESCUE TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member/ Incident Controller (IC)	Environment Officer
Team Member	Mining Foreman
SUPPORT TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Assistant Team Leader	Environment Officer
Team Member	Mining Mate
Security Team Leader/ Emergency Security Controller	Mines Foreman

Once the mine becomes operational, the above table along with names of personnel will be prepared and made easily available to workers. A mobile communication network and wireless shall connect Mine Emergency Control Room (MECR) to control various departments of the mine, fire station and neighbouring industrial units/mines.

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site

(b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

(c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

(d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

(e) Search and rescue team

There shall be a group of people trained and equipped to carryout rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team.

(f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g., fire brigade, police, doctor and media men etc.,

Emergency control procedure –

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
 - He will receive information continuously from incident controller and give decisions and directions to:
 - Incident controller
 - Mine control rooms
 - Emergency security controller

Proposed fire extinguishers at different locations –

The following type of fire extinguishers is proposed at strategic locations within the quarry.

Location	Type of Fire Extinguishers
Electrical Equipment's	CO ₂ type, foam type, dry chemical powder type
Fuel Storage Area	CO ₂ type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations
- Fire fighting and first-aid provisions in the mines office complex and mining area will be provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring

- Training and refresher courses for all the employees working in the quarry in phase manner
- Cleaning of mine faces will be carried out regularly
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN will be used at the time of blasting for audio signal.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS will be displayed at prominent places

7.4 CUMULATIVE IMPACT STUDY

Totally 10 quarries within the cluster, there are 1 Nos of Proposed quarry, 7 Public hearing completed quarries, 2 existing quarries falls in the cluster. The list of quarries is as below –

TABLE 7.3: LIST OF QUARRIES IN THE CLUSTER

PROPOSED QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Status
P1	Tmt. S. Manonmani, W/o. V. Somasundaram, 7/73, Karachery, Kinathukadavu, Coimbatore District.	360/1B (P) Arasampalayam, Kinathukadavu	1.30.00	Letter No. SEIAA- TN/F.No.9106/SEAC/ToR- 1345/2022 Dated: 09.02.2023
PUBLIC HEARING COMPLETED FILE				
P2	Thiru.M Loganathan S/o. Myilsamy Gounder, West Thottam, Karachery, Chettipalayam (via), Coimbatore	360/1A1(P), 360/1A2(P), 360/1A3. Arasampalayam & Kinathukadavu	0.78.5	Public hearing completed on 07.02.23
P3	Tmt. M.Rasamani, W/o K. Marimuthu, Karachery, Periyakuili Post, Chettipalayam via, Coimbatore District – 641 201	361/1A & 362/1 Arasampalayam & Kinathukadavu	0.99.0	Public hearing completed on 07.02.23
P4	Thiru. M. Viswanathan, S/o. Mailsamy Gounder, West Thottam, Chettipalayam via, Coimbatore District.	360/1A5 and 360/1A6 Arasampalayam & Kinathukadavu	1.00.5	Public hearing completed on 07.02.23
P5	Thiru. K. Ravikumar S/o. R. Kumarasamy, 7/68, West Thottam, Karacheri, Chettipalayam via, Coimbatore District.	355/2A (P), 355/2C (P) and 355/2D1A (P) Arasampalayam, Kinathukadavu	1.40.0	Public hearing completed on 07.02.23
P6	Thiru. V.Somasundaram, 7/73, Karachery, Kinathukadavu, Coimbatore District.	360/1B (P), 360/1E and 360/1G Arasampalayam	1.43.00	Public hearing completed on 07.02.23
P7	Tmt.R. Baby, W/o. R.S. Radhakrishnan, No.96/65G, Ruba Nagar, Ramanathapuram, Coimbatore District – 641 045	83/1C1B & 83/1C2, Pachapalayam & Sulur	1.33.0	EC Granted
P8	Thiru.K. Nataraj, Theerthakinaru Thottam, Karacheri, Chettipalayam via, Kinathukadavu Taluk, Coimbatore District – 641 201	84/5A Pachapalayam	1.48.0	EC Granted
TOTAL			9.72.0	
EXISTING QUARRIES				

CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
E-1	Thiru. S. Arunachalam	83/1C1A	1.33.00	13.04.2018 to 12.04.2023
E-2	Thiru. R. Chinnaamy	83/1A(P) & 83/2(P)	1.73.00	13.04.2018 to 12.04.2023
TOTAL			3.06.00	
EXPIRED QUARRIES				
EX-1	Thiru. R. Sampathkumar	84/4C Pachapalayam	0.46.5	10.06.2014 to 09.06.2018
TOTAL			0.46.5	
TOTAL CLUSTER EXTENT			12.78.0	

Note:-

- Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016

TABLE 7.4: SALIENT FEATURES OF THE PROPOSAL PROJECT -P1

Name of the Quarry	Tmt. S. Manonmani, Rough Stone & Gravel Quarry	
Toposheet No	58-F/01	
Latitude between	10°52'33.75"N to 10°52'38.99"N	
Longitude between	77°02'48.41"E to 77°02'53.53"E	
Highest Elevation	380 m AMSL	
Proposed Depth of Mining	27m (2m Gravel + 25m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³
	3,25,000	26,000
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	38,925	6,794
Ultimate Pit Dimension	79m (L) x 43m (W) x 27m (2m Gravel + 25m Rough Stone)	
Water Level in the surrounds area	70 - 65m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area exhibits Plain topography. The area has gentle sloping towards Western side. The altitude of the area is 380 m (max) above mean sea level. The area is covered by 2m thickness of Gravel Formation. Massive Charnockite is found after 2m (Gravel Formation) which is clearly inferred from the nearby existing quarrying pit.	
Machinery proposed	Jack Hammer	2Nos
	Compressor	1 No
	Excavator with bucket and rock breaker	1 No
	Tipper	1 No
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	14 Nos	
Project Cost	Rs. 24,49,000/-	
EMP Cost	Rs. 3,80,000/-	
CER Cost	Rs. 5,00,000/-	
Nearby Water Bodies	Water bodies	Distance & Direction

	Odai	50m Safety West
	Tank Near Mylenpalayam	850m_NE
	Tank Near Chettipalaym	2.5km_SW
	Kothavadi Lake	4.0km_NW
	Odai near_Kothavadi	7.0km_SE
Greenbelt Development Plan	Proposed to plant 780 trees in the 7.5m Safety Zone and panchayat roads.	
Proposed Water Requirement	1.2 KLD	
Nearest Habitation	Karacheri – 2.0Km- SE	
SALIENT FEATURES OF PROPOSAL “P-2”		
Name of the Mine	Thiru. M Loganathan Rough Stone & Gravel Quarry	
Land Type and ownership	Partially Patta land and partially lease land. Proponent made lease agreement with pattadhar and the same has been registered	
S.F. Nos	360/1A1 (P), 360/1A2 (P) & 360/1A3	
Extent	0.78.5 Ha	
Existing / Fresh	The project area is fresh land	
Geological Reserves	Rough Stone	Gravel
	1,96,250 m ³	15,700 m ³
Mineable Reserves	Rough Stone	Gravel
	49,650 m ³	9,068 m ³
Yearwise production details	Rough Stone	Gravel
	47,770 m ³	9,068 m ³
Mining Plan Period / Lease Period	5 Years	
Ultimate Pit Dimension	88m (L) x 55m (W) x 27m BGL (D)	
Toposheet No	58-F/01	
Latitude	10 ^o 52'37.69"N to 10 ^o 52'40.82" N	
Longitude	77 ^o 02'46.81"E to 77 ^o 02'50.75"E	
Water Level	60 to 65m BGL	
Machinery proposed	Jack Hammer	2
	Compressor	1
	Excavator with Bucket and Rock Breaker	1
	Tipplers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	15 Nos	
Total Project Cost	Project Cost	Rs. 19,01,000/-
	EMP Cost	Rs. 3,80,000/-
	Total	Rs. 22,81,000/-
CER cost	Rs 5,00,000/-	
SALIENT FEATURES OF PROPOSAL “P-3”		
Name of the Mine	Tmt. M. Rasamani Rough stone and Gravel quarry	
Land Type	Patta land -Jointly registered in the name of Proponent, Suganya and K. Kuppusamy Gounder Proponent registered lease agreement with pattadhar	
S.F. No.	361/1A & 362/1	
Extent	0.99.0 Ha	
Previous quarry details	Lessee	Tmt. Rasamani
	Lease period	01.06.2016 to 31.05.2021
	Environmental Clearance	Lr.No.SEIAA –TN / F.No.3649 / 1(a) /

	EC.No:2852 / 2015, Dated:15.02.2016	
Existing pit dimension	209m (L) X 44m (W) X 26.5m (D)	
Proposed depth	41.5m (D) BGL	
Geological Reserves	Rough Stone 1,86,044 m ³	Gravel 6m ³
Mineable Reserves	Rough Stone 68,150 m ³	
Proposed production for this five years mining plan period	Rough Stone 68,150 m ³	
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	209m (L) x 44m (W) x 41.5m (D) BGL	
Toposheet No	58-F/01	
Latitude	10 ^o 52'28.50" N to 10 ^o 52'35.38" N	
Longitude	77 ^o 02'38.39"E to 77 ^o 02'42.13"E	
Water Level	65 to 70m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tippers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	14 Nos	
Total Project Cost	Project Cost	Rs. 28,40,000/-
	EMP Cost	Rs.3,80,000/-
	Total	Rs.32,20,000/-
CER cost	Rs. 5,00,000	
SALIENT FEATURES OF PROPOSAL "P-4"		
Name of the Mine	Thiru M.Viswanathan Rough stone and Gravel quarry	
Land Type	Patta land -Consent registered in the name of Proponent, M. Sivasamy Proponent registered lease agreement with pattadhar	
S.F. No.	360/1A5 & 360/1A6	
Extent	1.00.5 Ha	
Previous quarry details	Lessee	Thiru. Sivasamy
	Lease period	26.06.2015 to 25.06.2020
	Environmental Clearance	Lr.No.SEIAA -TN / F.No.2526/EC /1(a) / 1901 / 2014, Dated:30.03.2015
Existing pit dimension	88m (L) X 80m (W) X 26.0m (D)	
Proposed depth	41.0m (D) BGL	
Geological Reserves	Rough Stone 2,12,100 m ³	Gravel 1995m ³
Mineable Reserves	Rough Stone 55,284 m ³	
Proposed production for this five years mining plan period as per ToR	Rough Stone 55,284 m ³	
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	88m (L) x 80m (W) x 41.0m (D) BGL	
Toposheet No	58-F/01	
Latitude	10 ^o 52'39.01" N to 10 ^o 52'43.20" N	
Longitude	77 ^o 02'51.86" E to 77 ^o 02'55.43" E	
Water Level	65 to 70m BGL	
Machinery	Jack Hammer	3
	Compressor	1
	Hydraulic Excavator	1

	Tippers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	16 Nos	
Total Project Cost	Project Cost	Rs. 22,13,000/-
	EMP Cost	Rs. 3,80,000/-
	Total	Rs. 25,93,000/-
CER cost	Rs. 5,00,000	
SALIENT FEATURES OF PROPOSAL "P-5"		
Name of the Mine	Thiru. K.Ravikumar Rough stone and Gravel quarry	
Land Type	Patta land - registered in the name of Proponent.	
S.F. No.	355/2A (P), 355/2C (P) & 355/2D1A (P)	
Extent	1.40.0 Ha	
Previous quarry details	Lessee	Thiru. K.Ravikumar
	Lease period	11.08.2009 to 10.08.2014
	Environmental Clearance	-
	Lessee	Thiru. K.Ravikumar
	Lease period	02.06.2016 to 01.06.2021
	Environmental Clearance	Lr.No. SEIAA-TN/F No. 3652 /1(a)/ EC.No.2849 /2015 dated:15.02.2016
Existing pit dimension	Pit-I: 125m (L) X 85m (W) X 34.0m (D) Pit-II: 45m (L) X 55m (W) X 22.0m (D)	
Proposed depth as per ToR	40.0m (D) BGL	
Geological Reserves	Rough Stone	Gravel
	4,06,492 m ³	240 m ³
Mineable Reserves	Rough Stone	
	77,631 m ³	
Proposed production for this five years mining plan period as per ToR	Rough Stone	
	48,251 m ³	
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	Pit-I: 125m (L) X 85m (W) X 52.0m (D) Pit-II: 45m (L) X 55m (W) X 22.0m (D)	
Toposheet No	58-F/01	
Latitude	10°52'38.84" N to 10°52'45.00" N	
Longitude	77°02'55.09" E to 77°02'59.84" E	
Water Level	65 to 70m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tippers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	14 Nos	
Total Project Cost	Project Cost	Rs. 32,82,000/-
	EMP Cost	Rs. 3,80,000/-
	Total	Rs. 36,62,000/-
CER cost	Rs. 5,00,000	
SALIENT FEATURES OF PROPOSAL "P-6"		
Name of the Mine	Thiru. V. Somasundaram Rough stone and Gravel quarry	
Land Type	Patta land - Registered in the name of V. Somasundaram	
S.F. No.	360/1B (P), 360/1E (P) & 360/1G	
Extent	1.43.0 Ha	
Previous quarry details	Lessee	Thiru. V. Somasundaram
	Lease period	17.09.2016 to 16.09.2021

	Environmental Clearance	Lr.No. SEIAA-TN/F.NO.5439/1(a)/EC.No.3546/2016
Existing pit dimension	Pit-1 75m (L) X 62m (W) X 21.0m (D) Pit-2 117m (L) X 45m (W) X 28.0m (D)	
Proposed depth as per ToR	32.0m (D) BGL	
Geological Reserves	Rough Stone 1,51,438m ³	Gravel 2,328 m ³
Mineable Reserves	Rough Stone 48,923 m ³	Gravel 1,350 m ³
Proposed production for this five-year mining plan period as per ToR	Rough Stone 48,923 m ³	Gravel 1,350 m ³
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	Pit-1 80m (L) X 77m (W) X 32.0m (D) Pit-2 47m (L) X 109m (W) X 32.0m (D)	
Toposheet No	58-F/01	
Latitude	10°52'34.60" N to 10°52'39.50" N	
Longitude	77°02'50.32" E to 77°02'55.12" E	
Water Level	65 to 70m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tipppers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	14 Nos	
Total Project Cost	Project Cost	Rs. 32,74,000/-
	EMP Cost	Rs. 3,80,000/-
	Total	Rs. 36,54,000/-
CER cost	Rs. 5,00,000	

SALIENT FEATURES OF PROPOSAL "P-7"	
Name of the Mine	Tmt.R. Baby, Rough stone and Gravel quarry
Land Type	It is a Patta lands, registered in the name of the applicant (Tmt.R. Baby), vide Patta No:1230.
S.F. No.	83/1C1B & 83/1C2
Extent	1.33.0 Ha
Previous quarry details	It is a fresh lease application but, the applied area has been considered quarrying operation earlier, favour of Thiru.R. Kumarasamy, Coimbatore, over an extent of 1.33.0 hectares of Patta lands in S.F.No's.83/1C1B & 83/1C2 of Pachapalayam Village, Sulur Taluk, Coimbatore District vide Rc.No.954/2008/X-1, Dated: 06.11.2008 for the period of Five years from 06.11.2008 to 05.11.2013 for quarrying of Roughstone & Gravel. The Legal heirs Tmt.K. Annakodi, W/o. Late R.Kumarasamy and Thiru.K.Ravikumar S/o.Late R.Kumarasamy has given their consent to Tmt.R.Baby, W/o.Radhakrishnan for quarrying Roughstone and the same has been endorsed by Notary Public. Supplementary lease deed made on 04.11.2011.
Existing pit dimension	Pit-1 115m (L) X 38m (W) X 34m (D) Pit-2 122m (L) X 48m (W) X 22m (D)
Proposed depth of mining	47m (2m Gravel +45 Roughstone)
Geological Reserves	Rough Stone
	Gravel

	5,98,500m ³	26,600 m ³
Mineable Reserves	Rough Stone	Gravel
	72,473 m ³	2,430 m ³
Proposed production for this five-year mining plan period	Rough Stone	Gravel
	72,473 m ³	2,430 m ³
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	77m (L) X 125m (W) X 47m (D)	
Toposheet No	58-F/01	
Latitude	10°52'42.28"N to 10°52'46.62"N	
Longitude	77°02'50.93"E to 77°02'56.53"E	
Water Level	60 to 55m BGL	
Machinery	Jack Hammer	3
	Compressor	1
	Hydraulic Excavator	1
	Tipplers	2
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	19 Nos	
Total Project Cost	Project Cost	Rs. 43,50,600/-
	EMP Cost	Rs.3,80,000/-
	Total	Rs.47,30,600/-
CER cost	Rs. 5,00,000	

SALIENT FEATURES OF PROPOSAL "P-S"

Name of the Mine	Thiru.K. Nataraj, Rough stone and Gravel quarry	
Land Type	It is a Patta land, registered in the name of applicant (Thiru. K. Nataraj) vide Patta No. 496	
S.F. No.	84/5A (P)	
Extent	1.48.0 Ha	
Previous quarry details	It is a fresh lease application but, the applied area has been considered quarrying operation earlier. The application was meritoriously processed by the District Collector, Coimbatore and recommended the quarry lease for the period of five years to the Roughstone and three years for Gravel for over an extent of 1.48.0 hectares only vide R.C.No. 257/Mines/2018, dated: 09.09.2019.	
Existing pit dimension	120m (L) X 63m (W) X 12m (D)	
Proposed depth as per ToR	33m (3m gravel +30m Rough stone) bgl.	
Geological Reserves	Rough Stone	Gravel
	4,44,000 m ³	44,400 m ³
Mineable Reserves	Rough Stone	Gravel
	62,849 m ³	1,950 m ³
Proposed production for this five-year mining plan period as per ToR	Rough Stone	Gravel
	62,849 m ³	1,950 m ³
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	133m (L) X 63m (W) X 33m (D)	
Toposheet No	58-F/01	
Latitude	10°52'38.92"N to 10°52'45.65"N	
Longitude	77°02'44.32"E to 77°02'47.80"E	
Water Level	65 to 60m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tipplers	2

Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	16 Nos	
Total Project Cost	Project Cost	Rs. 47,21,900/-
	EMP Cost	Rs. 3,80,000/-
	Total	Rs. 51,01,900/-
CER cost	Rs. 5,00,000	

SALIENT FEATURES OF EXISTING QUARRIES "E1"		
Name of the Mine	Thiru.S. Arunachalam, Rough stone and Gravel quarry	
Land Type	Patta land – Registered in the name of Thiru. S. Arunachalam vide patta no 336	
S.F. No.	83/1C1A	
Extent	1.33.0 Ha	
Previous quarry details	It is a Fresh lease,	
Existing pit dimension	90m (L) X 83m (W) X 12m (D)	
Proposed depth as per ToR	12m BGL	
Geological Reserves	Rough Stone	Gravel
	4,65,500 m ³	26,600 m ³
Mineable Reserves	Rough Stone	Gravel
	99,400 m ³	3,960 m ³
Proposed production for this five-year mining plan period as per ToR	Rough Stone	Gravel
	99,400 m ³	3,960 m ³
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	101m (L) X 92m (W) X 37m (D)	
Toposheet No	58-F/01	
Latitude	10°52'40.26" N to 10°52'45.20" N	
Longitude	77°02'47.54" E to 77°02'52.29" E	
Water Level	60 to 57m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tippers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	11 Nos	
Total Project Cost	Project Cost	Rs. 31,16,000/-
	EMP Cost	Rs. 7,10,000/-
	Total	Rs. 38,26,000/-
CER cost @ 2%	Rs. 76,520	

SALIENT FEATURES OF EXISTING QUARRIES "E2"		
Name of the Mine	Thiru R. Chinnasamy, Rough stone and Gravel quarry	
Land Type	Patta land – Registered in the name of Thiru. S. Arunachalam vide patta no 774	
S.F. No.	83/1A (P) & 83/2(P)	
Extent	1.73.0 Ha	
Previous quarry details	It is fresh Lease	
Existing pit dimension	Pit-1 131m (L) X 48m (W) X 7m (D) Pit-2 67m (L) X 80m (W) X 12m (D)	
Proposed depth as per ToR	37m (D) BGL	
Geological Reserves	Rough Stone	Gravel
	6,05,500 m ³	34,600 m ³
Mineable Reserves	Rough Stone	Gravel

	1,08,440 m ³	3570 m ³
Proposed production for this five-year mining plan period as per ToR	Rough Stone	Gravel
	1,08,440 m ³	3570 m ³
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	Pit-1 131m (L) X 48m (W) X 27m (D) Pit-2 67m (L) X 80m (W) X 37m (D)	
Toposheet No	58-F/01	
Latitude	10°52'43.95" N to 10°52'49.57" N	
Longitude	77°02'47.40" E to 77°02'54.89" E	
Water Level	60 to 57m BGL	
Machinery	Jack Hammer	2
	Compressor	1
	Hydraulic Excavator	1
	Tippers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	11Nos	
Total Project Cost	Project Cost	Rs. 31,96,000/-
	EMP Cost	Rs. 7,10,000/-
	Total	Rs. 39,06,000/-
CER cost @ 2%	Rs. 78,120	

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

Impact on Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.5 & 7.6

TABLE 7.5 CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

Proposed Quarry Project -A				
Quarry	Production for five-year plan period considering safety parameters	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	38,925	7,785	26	2 Trips/Day
Public hearing Conducted Projects-B				
Quarry	Production for five-year plan period considering safety parameters	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P2	47,770	9,554	32	3 Trips /Day
P3	68,150	13,630	45	4 Trips /Day
P4	55,284	11,056	37	3 Trips /Day
P5	48,251	9,650	32	3 Trips /Day
P6	48,923	9,784	33	3 Trips /Day
P7	72,473	14,495	48	4 Trips /Day
P8	62,849	12,570	42	4 Trips /Day
Total	4,03,700	80,740	269	24 Trips /Day
List of Existing Quarries -C				
Quarry	Production for five-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
E-1	99,400	19,880	66	6 Trips /Day

E-2	1,08,440	21,688	72	6 Trips/Day
Total	2,07,840	41,568	138	12Trips/ Day

TABLE 7.6: CUMULATIVE PRODUCTION OF GRAVEL IN CLUSTER

Proposed Quarry Project -A				
Quarry	Production for three-year plan period considering safety parameters	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	6,794	2,265	8	1-2 trips per day /
Public hearing Conducted Projects-B				
Quarry	Production for Three-year plan period considering safety parameters	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P2	9,068	3,023	10	1 load per week
P3	NIL			
P4				
P5				
P6	1,350	450	2	1 trips per week
P7	1,950	650	2	1- Trips /week
P8	2,430	810	3	1- Trips /week
Total	14,798	4,933	17	2 Trips /Day
List of Existing Quarries -C				
Quarry	Production for three year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
E-1	3,960	1,320	5	1 Trips /Day
E-2	3,570	1,190	4	1Trips/Day
Total	7,530	2,510	9	2Trips/ Day

Based on the above production quantities the emissions due to various activities in all the 1 proposal quarry includes various activities like ground preparation, excavation, handling and transport of mineral. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.7.

TABLE 7.7: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM₁₀ in µg/m³	
Location	AAQ1 – CORE
Background (average)	43.5
Anticipated Incremental due to the proposals	19.96
Resultant	63.46
NAAQ Norms	100 µg/m ³
PM_{2.5} in µg/m³	
Background (average)	23.3
Highest Incremental	11.92
Resultant	35.22
NAAQ Norms	80 µg/m ³
SO₂ in µg/m³	
Location	AAQ1 – CORE
Background (average)	9.6
Anticipated Incremental due to the proposals	3.69
Resultant	13.29
NAAQ Norms	80 µg/m ³

NO _x in µg/m ³	
Location	AAQ1 – CORE
Background (average)	25.0
Anticipated Incremental due to the proposals	13.87
Resultant	38.87
NAAQ Norms	80 µg/m ³

Noise Environment –

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

Lp_1 & Lp_2 are sound levels at points located at distances r_1 & r_2 from the source.

$Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

Source data has been computed taking into account of all the machinery and activities used in the mining process.

TABLE 7.8: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near North from the cluster 440m	47.5	47	50.3	55
Habitation Near East from the cluster 330m	46.8	49.7	51.5	
Habitation Near South from the cluster 850m	44.5	41.0	46.1	
Habitation Near South from the cluster 500m	44	41.0	45.8	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 41.0 – 49.7 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.)

Ground Vibrations

Ground vibrations due to mining activities in the all the 10 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the

major source of ground vibration from all the 10 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease areas. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from Cluster is tabulated in Table 7.9

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 7.9: GROUND VIBRATIONS AT MINES

PROPOSAL QUARRIES			
Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	11	980	0.056
PUBLIC HEARING COMPLETED FILE			
Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P2	14	1100	0.056
P3	20	900	0.103
P4	16	750	0.115
P5	14	620	0.141
P6	14	410	0.273
P7	21	550	0.236
P8	18	600	0.181
EXISTING QUARRIES			
Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
E1	29	380	0.551
E2	31	380	0.581

Source: PPV Calculation

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Socio Economic Environment

The mines shall provide employment and revenue will be created to government

TABLE 7.10: SOCIO ECONOMIC BENEFITS FROM CLUSTER MINES

PROPOSAL QUARRIES			
Code	Employment	Project Cost	CER
P1	14	Rs. 24,49,000/-	Rs 5,00,000/-
PUBLIC HEARING COMPLETED FILE			
Code	Employment	Project Cost	CER
P2	15	Rs. 22,81,000/-	Rs 5,00,000/-
P3	14	Rs. 32,20,000/-	Rs 5,00,000/-
P4	16	Rs. 25,93,000/-	Rs 5,00,000/-
P5	14	Rs 36,62,000/-	Rs 5,00,000/-

P6	14	Rs. 36,54,000/-	Rs 5,00,000/-
P7	19	Rs. 51,01,900/-	Rs 5,00,000/-
P8	16	Rs. 47,30,600/-	Rs 5,00,000/-
Total	121	Rs. 2,76,91,500	Rs. 40,00,000/-
EXISTING QUARRIES			
Code	Employment	Project Cost	CER
E1	11	Rs. 39,06,000/-	Rs. 78,120/-
E2	11	Rs. 38,26,000/-	Rs. 76,520/-
Total	22	Rs. 77,32,000/-	Rs. 1,54,640/-
Grand Total	143	Rs. 3,54,23,500/-	Rs. 41,54,640/-

A total of 143 people will get employment due to this cluster, in this already 22 people employed in the existing quarries. For the Existing quarries Corporate Environment Responsibility (CER) allocated as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

- In this cluster from the 1 Proposal, it is proposed to spent Rs 5,00,000/- for CER activities

Considering 500 Nos of trees per hectare it is proposed to plant About 780nos. of saplings in the proposed projects for the Mining plan period in safety barrier, Un utilized area and village roads with survival rate 80% (Anticipated). The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 7.11: GREENBELT DEVELOPMENT BENEFITS FROM PROPOSAL MINE

Proposed project				
CODE	No of Trees proposed to be planted	Survival %	Area to be covered	Name of the Species
P1	780	80	7.5m Safety barrier, Panchayat road and Village roads	Neem, Pongamia, Pinnata etc.,

It is anticipated that there shall growth of native species of Neem, Pongamia, Pinnata, Casuarina, etc., in the Proposal at a rate due to these proposals 780 Trees Planted over a period of 5 Years with Survival Rate of 80%. Besides every individual lease holder will plant Saplings in the School ground as part of CER activities.

7.5 PLASTIC WASTE MANAGEMENT PLAN

All the Project Proponent shall comply with Tamil Nadu Government Order (Ms) No: 84 Environment and Forest (EC.2) Department Dated: 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

Objective –

- To investigate the actual supply chain network of plastic waste.
- To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste
- Preparation of a system design layout, and necessary modalities for implementation and monitoring.

TABLE 7.12: ACTION PLAN TO MANAGE PLASTIC WASTE

Sl.No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/ fines for littering, burning plastic waste or committing any other acts of public nuisance	Mines Manager
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste	Mines Manager
3	Collection of plastic waste	Mines Foreman
4	Setting up of Material Recovery Facilities	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance	Mine Owner

Source: Proposed by FAE's and EC

Carbon Emission

Carbon dioxide (CO₂): Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH₄): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills.

Nitrous oxide (N₂O): Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding environment leading to release of Greenhouse gases (GHC), rise in temperature & livelihood of local people.

Hydrothermal/Geothermal effect due to destruction in the Environment.

- Hydrothermal –relating to hot water used especially of the formation of minerals by hot solutions rising from a cooling magma.
- Geothermal -relating to or produced by the internal heat of the earth.
- The proposed activity is for quarrying of rough stone by opencast mechanized mining method for an ultimate depth of 27 m bgl.
- The proposed mining area and the surrounding falls under hard rock formation i.e., Charnockite Formation and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Zone II of seismic zones classification.
- The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.

Bio-geochemical processes and its foot prints including environmental stress.

- Bio-geochemical cycle – any of the natural pathways by which essential elements of living matter are circulated. The term biogeochemical is a contraction that refers to the consideration of the biological, geological, and chemical aspects of each cycle.
- This proposed activity is for quarrying of rough stone quarry and maximum depth of mining is 27 m bgl and the applied area for quarrying is a patta land with no major vegetation and it is proposed for greenbelt

development all along the safety barrier and construction of garland drainage and implement the proposed EMP strictly to mitigate the impacts on surrounding environment.

- No Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and allowed to collect rain water and shall enrich the ecosystem.

Sediment's geochemistry in the surface streams.

- Sedimentary Geochemistry has been in use to understand the conditions of deposition, climatic variations, tectonic setting, provenance, reservoir characteristics, etc.,
- The elemental composition of sediments in surface streams is the product of physical and chemical erosion of rocks, which is then transported across drainage networks.
- The project area when broken up lead to create void and land use pattern of the proposed area is alerted by ways of formation of open pit and as mitigation measure its proposed for garland drain all along the boundary barrier to ensure that no natural drainage pattern is disturbed and the garland drains are in turn connected to settlement traps were its ensured that no debris are carried away and hence the proposed activity shall not lead to any deposition of sediments in the nearby surface streams.

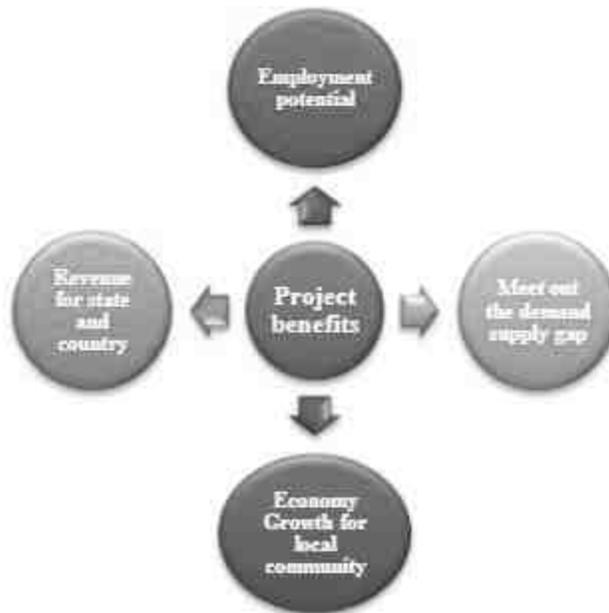
CHAPTER – 8: PROJECT BENEFITS

8.1 General

The Proposed Project for Quarrying Rough Stone and Gravel at Arasampalayam Village aims to produce 38,925 m³ Rough Stone & 6,794 m³ of Gravel over a period of 5 Years.

This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

- Increase in Employment Potential
- Improvement in Socio-Economic Welfare
- Improvement in Physical Infrastructure
- Improvement in Social infrastructure



8.1 Employment Potential

This proposed project falls in the cluster will provide employment opportunities to about 14 persons directly. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.1 Socio-Economic Welfare Measures Proposed

The impact of mining activity in the area will be more positive than negative on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

8.1 Improvement in Physical Infrastructure

The proposed project site is located in Arasampalayam village, Kinathukadavu taluk, Coimbatore District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to the cluster quarry projects.

- Road Transport facilities.
- Communications
- Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

8.1 Improvement in Social Infrastructure

The quarry projects in the region will have positive impact on the social economic condition of the area by way of providing employment to the local peoples; thereby increasing the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture.

- Social welfare program like medical camps, educational facilities to the poverty level students, providing water supply from the quarries during drought seasons will be taken from the project proponent's
- Supplementing Govt. efforts in health monitoring camps, social welfare and various Awareness programs among the rural population.

8.1 Other Tangible Benefits

The proposed quarry project is likely to have other tangible benefits as given below:

- Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation, for supply of goods and services to the quarry site and other community services.
- Additional housing demand for rental accommodation will increase.
- Cultural, recreation and aesthetic facilities will also improve.
- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity.
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

CORPORATE SOCIAL RESPONSIBILITY

Individual Project Proponents will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is \leq 100 crores, they shall contribute 2% of Capital Investment towards CER.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

TABLE 8.1 CER – ACTION PLAN

Code	CER
P1	Rs 5,00,000/-
Total	Rs 5,00,000/-

Source: Field survey conducted by FAE, consultation with project proponents

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

Not Applicable, Since Environmental Cost Benefit Analysis not recommended at the Scoping stage.

CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN

10.0 General

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 Environmental Policy

The Project Proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent Tmt.S. Manonmani will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities.
- Implement monitoring programmes to provide early warning of any deficiency or unanticipated performance in environmental safeguards.
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement.

Description of the Administration and Technical Setup –

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 Land Environment Management –

Land degradation is one of the major adverse impacts of opencast mining in the form of excavated voids and contamination of soil affects the viability of the soil resource.

Soil contamination then has a number of flow-on effects like, Inhabitation of plant growth, and death of existing plants in contaminated areas and contamination of soil also has potential to impact on a surface water quality and groundwater resources.

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Designing vehicle wash-down system so that all washed water is captured and passed through grease and oil separators.	Mines Manager
Re fueling will be carried out in a safe location, away from vehicle movement pathways	Mine Foreman & Mining Mate
Greenbelt development and its maintenance	Environment Officer
Garland drains with catch pits to be provided all around the project area to prevent run off affecting the surrounding lands.	Environment Officer
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager
Thick plantation using native flora species will be carried out on the top benches.	Mines Manager
There will be formation of a small surface water body in the mined out area, which can be used for watering the greenbelt at the conceptual stages.	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

10.3 Soil Management

Top Soil Management –

- There is no top soil within the project area thin layer of soil will be utilized for Greenbelt purpose.

Overburden / Waste and Side Burden Management –

- The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Garland drains are to be paved around the quarry pit area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface water via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer

Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.4 Water Management

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office.

The quarrying operation is proposed upto a depth of 27m BGL, the water table in the area is 65m – 70m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3: PROPOSED CONTROLS FOR WATER ENVIRONMENT

CONTROL	RESPONSIBILITY
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations	Mines Manager
Ensure there is no process effluent generation or discharge from the project area into water bodies	Mines Foreman
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Foreman
Monthly or after rainfall, inspection for performance of water management structures and systems	Mines Manager
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

10.5 Air Quality Management

The existing and proposed mining activities would result in the increase of particulate matter concentrations due to fugitive dust. Water sprinkling twice per day on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements.

Carbon dioxide (CO₂): Carbon dioxide enters the atmosphere through burning fossil fuels (Coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Therefore, the proposal for 780 Nos. of trees to be planted.

TABLE 10.4: PROPOSED CONTROLS FOR AIR ENVIRONMENT

CONTROL	RESPONSIBILITY
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.6 Noise Management

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and other allied activities. No mining activities are planned during night time.

TABLE 10.5: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters and 50m safety barrier) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an in-built mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring shall be carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or	Mines Manager

altering the hole inclination	
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.7 *Ground Vibration and Fly Rock Control*

TABLE 10.6: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

CONTROL	RESPONSIBILITY
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by FAE's & EIA Coordinator

10.8 *Biological Environment Management*

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

- Greenbelt development all along the safety barrier of the project area
- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- Year wise greenbelt development will be recorded and monitored
 - Based on the area of plantation.
 - Period of plantation
 - Type of plantation
 - Spacing between the plants
 - Type of manuring and fertilizers and its periods
 - Lopping period, interval of watering
 - Survival rate.
 - Density of plantation
- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

10.8.1 *Green Belt Development Plan*

About 780 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier and nearby village roads with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7 PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

Year	No. of trees proposed to be planted	Area to be covered	Name of the species	Survival rate expected in %
I	780	7.5m Safety zone, Panchayat road & Village roads	Neem, Pungam, Sengondrai, Panai, Naval	80

Source: Conceptual Plan of Approved Mining plan & proposed by FAE's & EIA Coordinator

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.8.2 Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth.

TABLE 10.8: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Botanical Name	Local Name	Importance
1.	Azadirachta indica	Neem, Vembu	Neem oil & neem products
2.	Borassus Flabellifer	Palmyra Palm	Tall Wind breaker tree and its fruits are edible

Source: Proposed by FAE's & EIA Coordinator

10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The main factors of occupational health impact in quarries are fugitive dust and noise. Safety of employees during quarrying operation and maintenance of mining equipment will be taken care as per Mines Act 1952 and Rule 29 of Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise and vibration sufficient measures have been provided.

10.9.1 Medical Surveillance and Examinations –

- Identifying workers with conditions that may be aggravated by exposure to dust & noise and establishing baseline measures for determining changes in health.
- Evaluating the effect of noise on workers
- Enabling corrective actions to be taken when necessary
- Providing health education

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detail medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure
- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

TABLE 10.9: MEDICAL EXAMINATION SCHEDULE – P1

Sl.No	Activities	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check - up					
B	Audiometric Test					
C	Eye Check - up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups:- Work force will be divided into three targeted groups age wise as follows:-						
Age Group		PME as per Mines Rules 1955		Special Examination		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.

- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

FIGURE 10.1: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



10.9.3 Health and Safety Training Programme

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner.

TABLE 10.10: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	Employee rights Supervisor responsibilities Self-rescue Respiratory devices Transportation controls Communication systems Escape and emergency evacuation Ground control hazards Occupational health hazards Electrical hazards First aid Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance,	Employees assigned to new work tasks	Before new Assignments	Variable	Task-specific health & safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations Fire warning Ground control hazards First aid Electrical hazards Accident prevention Explosives Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules Respiratory devices

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms.

10.9.4 Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT – P1

	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	13000	13000
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance -2 Units	50000	5000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 1 Units	5000	250
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	26000

	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	101205

Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Mine Closure	1. Progressive Closure Activity - Surface Runoff management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	13000	5000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	260000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 780 Trees - (280 Inside Lease Area & 500 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	56000	8400
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	150000	15000
4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	39000	0	

	5. Contribution towards Green Fund, As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	229658	0
Implementation of EC, Mining Plan & DGMS Condition	Scientific Study Report	Study report of Hydrogeological, Slope Stability and Vibration	300000	0
	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 14 Employees	56000	14000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	14000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	2600
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	65000	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000

	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR, 1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	As per MoEF & CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoEF & CC OM	500000	0
TOTAL			2428000	1181455

Year Wise Break Up	
1st Year	₹ 36,09,455
2nd Year	₹ 12,40,528
3rd Year	₹ 13,02,554
4th Year	₹ 13,67,682
5th Year	₹ 14,36,066
Total	₹ 90 lakhs

In order to implement the environmental protection measures, an amount of Rs.24.28 lakhs as capital cost and recurring cost as Rs. 11.81 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project.

10.10 CONCLUSION –

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

CHAPTER – 11: SUMMARY AND CONCLUSIONS

Tmt. S. Manonmani Rough Stone & Gravel Quarry (Extent – 1.30.0 ha); falls under “B” category as per MoEF & CC Notification (S.O. 3977 (E)).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

A detailed Draft EIA /EMP Report is prepared for public and other stakeholders' suggestions and the Final EIA /EMP Report will be prepared based on the outcome of Public Consultation and the outcome will be incorporated in the EMP Report.

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March to May 2021 (Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29th August 2017 & MoEF & CC Office Memorandum F.No.IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the Draft EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 122people directly in the Eight proposed projects people. Existing projects directly 22 people.

As discussed, it is safe to say that the one proposed quarry in cluster is not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from Tmt. S. Manonmani Rough Stone & Gravel Quarry (Extent – 1.30.0 ha).

CHAPTER 12.0: DISCLOSURE OF CONSULTANTS

The Project Proponent's –

Tmt. S. Manonmani, Rough Stone & Gravel Quarry (1.30.0 ha) have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below –

Sl.No.	Name of the expert	In house/ Empanelled	EIA Coordinator		FAE	
			Sector	Category	Sector	Category
1	Dr. M. Iftikhar Ahmed	In-house	1	A	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	-	-	HG GEO	A A
3	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	-	SW	B
6	Mr. Govindasamy	In-house	-	-	WP	B
7	Mrs. K. Anitha	In-house	-	-	SE	A
8	Mrs. Amirtham	In-house	-	-	EB	B
9	Mr. Alagappa Moses	Empanelled	-	-	EB	A
10	Mr. A. Allimuthu	In-house	-	-	LU	B
11	Mr. S. Pavel	Empanelled	-	-	RH	B
12	Mr. J. R. Vikram Krishna	Empanelled	-	-	SHW RH	A A

Abbreviations	
EC	EIA Committee
ACC	Accredited EIA Coordinator
FAB	Functional Area Expert
FAA	Functional Area Associate
EM	Team Member
CEO	Geologist
WP	Water to Basin/ catchment/ preparation and control
AP	Air pollution/ emissions/ prediction and control
LU	Land Use
NV	Mineralogy, its quality, availability, and production
EB	Ecology and bio-diversity
NV	Noise and vibration
SE	Soil erosion
MO	Hydrology, ground water and water conservation
SC	Soil conservation
BM	Risk assessment and hazard management
SPW	Solid and hazardous wastes
MW	Municipal Solid Wastes
ISW	Industrial Solid Wastes
HW	Hazardous Wastes

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP for Rough Stone & Gravel Cluster Quarries over an Extent of 1.30.0 ha in Arasampalayam Village of Kinathukadavu Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA/EMP Report.

Name: **Dr. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:



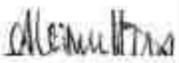
Period of Involvement: **January 2019 to till date**

Associated Team Member with EIA Coordinator:

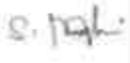
1. Mr. S. Nagamani
2. Mr. Viswanathan
3. Mr. Santhoshkumar
4. Mr. S. Ilavarasan

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul style="list-style-type: none"> ▪ Identification of different sources of air pollution due to the proposed mine activity ▪ Prediction of air pollution and propose mitigation measures / control measures 	Mr. A. Jagannathan	
2	WP	<ul style="list-style-type: none"> ▪ Suggesting water treatment systems, drainage facilities ▪ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures. 	Dr. M. Ifthikhar Ahmed	
			Mr. N. Senthilkumar	
3	HG	<ul style="list-style-type: none"> ▪ Interpretation of ground water table and predict impact and propose mitigation measures. ▪ Analysis and description of aquifer Characteristics 	Dr. P. Thangaraju	
4	GEO	<ul style="list-style-type: none"> ▪ Field Survey for assessing the regional and local geology of the area. ▪ Preparation of mineral and geological maps. ▪ Geology and Geo morphological analysis/description and Stratigraphy/Lithology. 	Dr. M. Ifthikhar Ahmed	
			Dr. P. Thangaraju	
5	SE	<ul style="list-style-type: none"> ▪ Revision in secondary data as per Census of India, 2011. ▪ Impact Assessment & Preventive Management Plan ▪ Corporate Environment Responsibility. 	Mrs. K. Anitha	
6	EB	<ul style="list-style-type: none"> ▪ Collection of Baseline data of Flora and Fauna. ▪ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. 	Mrs. Amirtham	

		<ul style="list-style-type: none"> Impact of the project on flora and fauna. Suggesting species for greenbelt development. 	Mr. Alagappa Moses	
7	RH	<ul style="list-style-type: none"> Identification of hazards and hazardous substances Risks and consequences analysis Vulnerability assessment Preparation of Emergency Preparedness Plan Management plan for safety. 	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	<ul style="list-style-type: none"> Construction of Land use Map Impact of project on surrounding land use Suggesting post closure sustainable land use and mitigative measures. 	Mr. A. Allimuthu	
9	NV	<ul style="list-style-type: none"> Identify impacts due to noise and vibrations Suggesting appropriate mitigation measures for EMP. 	Mr. A. Jagannathan	
10	AQ	<ul style="list-style-type: none"> Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. Recommending mitigations measures for EMP 	Mr. N. Senthilkumar	
11	SC	<ul style="list-style-type: none"> Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr. M. Ifthikhar Ahmed	
12	SHW	<ul style="list-style-type: none"> Identify source of generation of non-hazardous solid waste and hazardous waste. Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

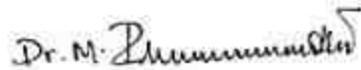
Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	<ul style="list-style-type: none"> Site Visit with FAE Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures Provide inputs on Geological Aspects Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures 	
2	Mr. Viswanathan	AP; WP; LU	<ul style="list-style-type: none"> Site Visit with FAE Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures Assisting FAE on sources of water pollution, its impacts and suggest control measures Assisting FAE in preparation of land use maps 	
3	Mr. Santhoshkumar	GEO; SC	<ul style="list-style-type: none"> Site Visit with FAE Provide inputs on Geological Aspects Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
4	Mr. Umamahesvaran	GEO	<ul style="list-style-type: none"> Site Visit with FAE Provide inputs on Geological Aspects Assist in Resources & Reserve Calculation and 	

			preparation of Production Plan & Conceptual Plan	
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> Site Visit with FAE Assist FAE with collection of data's Provide inputs by analysing primary and secondary data 	<i>A. Allimuthu</i>
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> Site Visit with FAE Assisting FAE in preparation of land use maps Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	<i>S. Ilavarasan</i>
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> Site Visit with FAE Assist FAE & provide inputs on aquifer characteristics, ground water level/table Assist with methods of ground water recharge and conduct pump test, flow rate 	<i>E. Vadivel</i>
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> Site Visit with FAE Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures Assist FAE with prediction modelling 	<i>D. Dinesh</i>
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> Site Visit with FAE Assist FAE with collection of baseline data Provide inputs and assist with labelling of Flora and Fauna 	<i>P. Panneer Selvam</i>
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> Site Visit with FAE Assist FAE with collection of baseline data Provide inputs and assist with labelling of Flora and Fauna 	<i>T. Annapp</i>

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the EIA/EMP for Rough Stone & Gravel Quarries over an Extent of 1.30.0 ha in Arasampalayam Village of Kmathukadavu Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature & Date:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

NABET/EIA/2225/RA0276 Dated: 20.2.2023

Validity:

August 06, 2025

ANNEXURE

TMT.S. MANONMANI ROUGH STONE & GRAVEL QUARRY

Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State

ToR obtained vide

Letter No. SEIAA- TN/F.No.9106/SEAC/ToR-1345/2022 Dated: 09.02.2023

CLUSTER EXTENT = 12.78.0 ha

Project Proponent	Proposed Project	Extent
Tmt.S.Manonmani, W/o. Somasundaram No.7/73,Karachery, Arasampalayam, Kinathukadavu, Coimbatore District. Pin:641 201 Mobile no: +91 98657 55889	S.F. Nos:360/1B (Part) Arasampalayam Village, Kinathukadavu Taluk Coimbatore District Tamilnadu State	1.30.0 ha

LIST OF ANNEXURES

TMT.S. MANONMANI ROUGH STONE & GRAVEL QUARRY		
Tmt.S.Manonmani	Copy of ToR	1A - 23A
	Copy of 500m Radius Letter	24A-26A
	Copy of Mining plan approval letter	27A-28A
	Copy of Approved Mining plan	29A-99A
	Copy of Additional document	100A - 113
Thiru.M. Loganathan	Copy of ToR	114A - 131A
Tmt. M.Rasamani,	Copy of ToR	132A – 148A
Thiru. M. Viswanathan	Copy of ToR	149A – 169A
Thiru. V.Somasundaram,	Copy of ToR	170A – 190
Thiru. K. Ravikumar	Copy of ToR	191A-211A
Tmt.R. Baby	Copy of EC	212A – 243A
Thiru.K. Nataraj,	Copy of EC	244A – 275A
EXISTING		
Thiru.R. Chinnasamy	Copy of Approved Mining plan	276A- 325A
Thiru.S. Arunachalam	Copy of Approved Mining plan	326A- 372
	Copy of Baseline data	373A-404A
	Copy of NABET certificate	405A



**THIRU.DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY**

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU**

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No.1, Jeenis Road, Saidapet,
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Phone No. 044-24359973
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TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/E.No.9106/SEAC/ToR-1345/2022 Dated:09.02.2023.

To

Tmt.S.Manonmani
W/O. Somasundaram
No.7/73,Karachery
Arasampalaya
Kinathukadavu Taluk
Coimbatore - 641 201.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough stone & gravel quarry lease over an extent of 1.30.0 Ha S.F.No.360/IB (Part), Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Tmt.S.Manonmani - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/73759/2022, dated 16.03.2022.
 2. Your application submitted for Terms of Reference dated: 21.03.2022.
 3. Minutes of the 274th SEAC meeting held on 19.05.2022.
 4. PP has furnished reply vide letter dated 10.9.2022.
 5. Minutes of the 345th SEAC meeting held on 10.01.2023.
 6. Minutes of the 590th SEIAA meeting held on 09.02.2023.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.


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The proponent, Tmt.S.Manonmani has submitted application for Terms of Reference (ToR) in Form-I, Pre- Feasibility report for the Proposed Rough stone & gravel quarry lease over an extent of 1.30.0 Ha S.F.No.360/1B (Part), Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & gravel quarry lease over an extent of 1.30.0 Ha S.F.No.360/1B (Part), Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Tmt.S.Manonmani- For Terms of Reference.

(SIA/TN/MIN/73759/2022 Dt: 18.03.2022)

The proposal was placed in 274th SEAC meeting held on 19.5.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Tmt.S.Manonmani has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 1.30.0Ha S.F.No.360/1B(Part), Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "BI" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan, the lease period is for 5 years. The production as per mining plan for 5 years not to exceed 38,925m³ of Rough Stone and 6,794m³ of Gravel. The Annual peak production as per mining plan is 10,260 m³ of Rough Stone (3rd year) and 2408 m³ of Gravel (1st year) with ultimate depth of 27m.

Based on the presentation made by the proponent and the documents furnished, SEAC noted that the proposed site seems to be an agricultural land with cultivation seen around the site. The SEAC decided that the PP shall furnish the land use conversion certificate from the competent authority. On the receipt of the same further deliberation will be done.

Now the proposal was placed in 345th SEAC meeting held on 10.01.2023.

The PP has furnished reply vide letter dated 10.9.2022. As per Directorate of Town and Country planning Department classification the survey number 360/1B is in non-planned area.

Based on the presentation made by the proponent, SEAC decided to recommend for grant of Terms of Reference (TOR) with Public Hearing, subject to the following TORs, in addition to


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the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The proponent is requested to carry out a survey and enumerate on the structures located within 100m, 150m, 200m, 250m, 300m and 500m from the boundary of the mine lease area.
2. The proponent shall discuss the funds for mitigation measures to be included in the EMP along with compensatory plantations.
3. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Necessary data and documentation in this regard may be provided.
4. The proponent shall submit the details regarding the nature of blasting activity which will be carried out.
5. The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., upto a radius of 25 km from the proposed site.
6. The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.
7. In the case of proposed lease in an existing (or old) quarry where the benches are non-existent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the 'highwall' benches to ensure slope stability in the proposed quarry lease which shall be vetted by the concerned Asst. Director of Geology and Mining, during the time of appraisal for obtaining the EC.
8. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, H/I Class mines manager appointed by the proponent.
9. Since the quarry lies in a cluster situation, the PP shall furnish a Standard Operating Procedure for carrying out the safe blasting operation while considering the adjacent quarries lies in a radial distance of 500 m from their quarry.

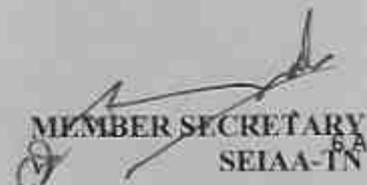

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10. Details of Green belt & fencing shall be included in the EIA Report.
11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
13. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
14. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
15. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
16. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
17. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying

- operations scientifically and systematically in order to ensure safety and to protect the environment.
18. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
 19. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
 20. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
 21. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water
 22. bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 23. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
 24. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
 25. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
 26. Impact on local transport infrastructure due to the Project should be indicated.


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27. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
28. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
29. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
30. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
31. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
32. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
33. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
34. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
35. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.


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37. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
38. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
39. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
40. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
41. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
42. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
43. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
44. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.


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Appendix - I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	ஏகம்மலம்
2	<i>Adenanthera pavonina</i>	Manjaci	மஞ்சாடி ஆனைக்குன்றியன்
3	<i>Albizia lebeck</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Uoti	உஓதி
5	<i>Bauhinia purpurea</i>	Maniharai	மந்திஹாரை
6	<i>Bauhinia racemosa</i>	Aathu	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமர
9	<i>Borassus flabellifer</i>	Parai	பாலை
10	<i>Butea monosperma</i>	Munakkamaram	முருக்கமரம்
11	<i>Borax carya</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புனை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொண்டை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொண்டை
15	<i>Chloroxyton swietenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Marjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நடுவூதி
18	<i>Creteva adansonii</i>	Mavalingum	மாவலிங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உவா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சீரு உவா
21	<i>Diospyro sebenuum</i>	Karingali	கரிங்கலை
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகை
23	<i>Ficus amplicarpa</i>	Kallichi	கல் இச்சி
24	<i>Hibiscus tiliacou</i>	Aatrupoovarasu	ஆட்டுப்பூவரசு
25	<i>Hartwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயிலி மரம், ஆயிலி
27	<i>Lanuca coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limoua acutissima</i>	Vila maram	வில்லா மரம்
31	<i>Litsea glutinosa</i>	Pisampattai	பிசம்பட்டை, பிசம்பட்டை
32	<i>Madhuca lonyifolia</i>	Iluppai	இலுப்பை
33	<i>Mankara hexandra</i>	UlakkaPalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	காடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுனா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுனா
38	<i>Phoenix sylvestre</i>	Eachai	ஏச்சை
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

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40	<i>Premna mollissima</i>	Munnai	முத்து
41	<i>Premna serratifolia</i>	Narumunrai	நறு முத்து
42	<i>Premna tomentosa</i>	Malaijoovarasi	மலை முத்து
43	<i>Prosopis cineraria</i>	Vanni maram	வாணி மரம்
44	<i>Pterocarpus marsupium</i>	Vengal	வேங்கை
45	<i>Pterocarpium canescens</i>	Vennangu, Tada	வேண்டாங்கு
46	<i>Pterocarpium xylocarpum</i>	Polavu	முத்து
47	<i>Putranjiva roxburghii</i>	Karpala	கர்பலா
48	<i>Salvadora persica</i>	Ugga Maram	உகா மரம்
49	<i>Sapindus emarginatus</i>	Marupungari, Scapukai	மாறுபுங்காரி செப்புக்காணி
50	<i>Sarcos asoca</i>	Asoca	அசோகா
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	யெட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேர்தாங்கு கோட்டை
54	<i>Syzygium cumusi</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandi	தாண்டி
56	<i>Terminalia arjuna</i>	Ven marudhu	வேண்டா மரம்
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தா வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	முத்து
59	<i>Walsuratrifoliata</i>	valsura	வால்சுரா
60	<i>Wrightia tinctoria</i>	Veppalsi	வேப்பாசி
61	<i>Pithecolobium dulce</i>	Kodukkapuli	கோடுக்காபுலி

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 590th Authority meeting held on 09.02.2023. The authority noted that this proposal was placed for appraisal in this 345th meeting of SEAC held on 10.01.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in 'Annexure B' of this minute.

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,


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3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical land chemical features .
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.

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Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.
14. Impact on soil flora & vegetation around the project site.
15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

Water Environment

23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
24. Erosion Control measures.


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25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.

Climate Change

32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

EMP

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.


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36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment

37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.

Disaster Management Plan

38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.

Others

39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
40. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

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- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible


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with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.

- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing


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the same should be made as part of the project cost.

- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling

- should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
 - 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
 - 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
 - 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
 - 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
 - 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
 - 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
 - 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
 - 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase

in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the

Project shall clearly indicate environmental, social, economic, employment potential, etc.

- 44) Besides the above, the below mentioned general points are also to be followed:-
- a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - i) As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic,


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- flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
 20. Likely impact of the project on air, water, land, flora-fauna and nearby population
 21. Emergency preparedness plan in case of natural or in plant emergencies
 22. Issues raised during public hearing (if applicable) and response given
 23. CER plan with proposed expenditure.
 24. Occupational Health Measures
 25. Post project monitoring plan
 26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
 27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
 28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
 29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
 30. Reserve funds should be earmarked for proper closure plan.
 31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.

- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA-II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moefnic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I) (part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.

5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. Stock File.



From

Thiru.S.Rameshkumar, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Coimbatore.

To

Tmt.S.Manonmani,
W/o.V.Somasundaram ,
7/73, Karachery,
Kinathukadavu,
Coimbatore District.

Rc.No.857/Mines/2021 Dated: 15.02.2022

Sir,

Sub: Mines & Minerals - Minor Mineral - Coimbatore District
- Kinathukadavu Taluk - Arasampalayam Village -
Survey No.360/1B (Part) over an extent of 1.30.0
hectares of patta land - Application preferred by
Tmt.S.Manonmani for quarrying Roughstone and Gravel
- Precise area communicated - Details of quarries
situated within 500 meter radial distance - requested -
furnished - reg.

- Ref. 1. Assistant Director, Dept. of Geology and Mining,
Coimbatore Letter Rc.No.857/Mines/2021, Dated:
01.02.2022
2. Tmt.S.Manonmani, Coimbatore letter dated
15.02.2022.

I invite kind attention to the reference cited wherein
Tmt.S.Manonmani has been issued precise area for the grant of Rough
Stone and Gravel quarry lease over an extent of 1.30.0 hectares of patta
land in Survey No. 360/1B (Part) of Arasampalayam Village,
Kinathukadavu Taluk, Coimbatore District.

In the reference 2nd cited of Tmt.S.Manonmani has requested to
furnish details of quarries situated within 500 meter radial distance from
the proposed area.

In this connection the details of abandoned, expired, existing and
proposed quarries situated within 500 meter radial distance from the
proposed area is furnished below.

i) Existing Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease period	Remarks
1	S.Arunachalam	Pachapalayam 83/1C1A	1.33.0	13.04.2018 to 12.04.2023	
2	R.Chinnasamy	Pachapalayam 83/1A(P), 2(P)	1.73.0	13.04.2018 to 12.04.2023	

ii) Expired Quarries

Sl. No	Name of the Owner	Village &S.F.Nos.	Extent in Hect.	Lease period	Remarks
1.	R.Sampathkumar	Pachapalayam 84/4C	0.46.5	10.06.2014 to 09.06.2018	

iii) Abandoned quarries

Sl. No.	Name of the Owner	Village &S.F.Nos.	Extent in Hect.	Lease period	Remarks
---Nil---					

iv) Proposed quarries

Sl. No	Name of the Owner	Village &S.F.Nos.	Extent in Hect.	Remarks
1.	S.Manonmani	Arasampalayam 360/1B(Part)	1.30.0	Subject Area Precise area communicated
2.	V.Somasundaram	Arasampalayam 360/1B(Part), 360/1E(Part), 360/1G	1.43.0	Precise area communicated
3.	M.Viswanathan	Arasampalayam 360/1A5, 360/1A6	1.00.5	-
4.	M.Loganathan	Arasampalayam 360/1A1(Part), 360/1A2 (Part), 360/1A3(Part)	0.78.5	Precise area communicated
5.	K.Ravikumar	Arasampalayam 355/2A (Part), 355/2C(Part) & 355/2D1	1.40.0	Precise area communicated
6.	Tmt.M.Rasamani	Arasampalayam 361/1A, 362/1	0.99.0	Pending with SEIAA

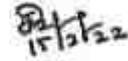
7	R.Baby	Pachapalayam 83/1C1B, 1C2	1.33.0	Pending with SEIAA
8	K.Nataraj	Pachapalayam 84/5A	1.48.5	Pending with SEIAA

v) Future Proposed quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Remarks
---NIL---				


 Assistant Director,
 Dept. of Geology and Mining,
 Coimbatore.





From

To

Thiru.S.Rameshkumar, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Coimbatore.

Tmt.S.Manonmani,
W/o.V.Somasundaram ,
7/73, Karachery,
Kinathukadavu,
Coimbatore District.

Rc.No.857/Mines/2021 Dated: 15.02.2022

Sir,

Sub: Mines & Minerals - Minor Mineral - Coimbatore District - Kinathukadavu Taluk - Arasampalaym Village - Survey No.360/1B (Part) over an extent of 1.30.0 hectares of patta land - Application preferred by Tmt.S.Manonmani for quarrying Roughstone and Gravel - Submission of mining plan for approval - approved -regarding.

- Ref: 1. Quarry lease application dated 08.07.2021 and 22.12.2021 preferred by Tmt.S.Manonmani, Coimbatore.
2. Assistant Director, Dept. of Geology and Mining, Coimbatore Letter Rc.No.857/Mines/2021, Dated: 01.02.2022
3. Tmt.S.Manonmani, Coimbatore District letter dated 15.02.2022.

In response to the precise area communicated by the Assistant Director of Geology and Mining, Coimbatore the applicant Tmt.S.Manonmani vide reference 3rd cited has submitted three copies of mining plan for the grant of Roughstone and Gravel quarry lease over an extent of 1.30.0 hectares of patta land in Survey No. 360/1B (Part) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District.

2. The mining plan submitted for the grant of Roughstone and Gravel quarry lease over an extent of 1.30.0 hectares in Survey No. 360/1B (Part) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District has been verified in detail.

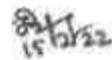
3. As per the guidelines/instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, dated 19.11.2012, the mining plan is hereby approved, subject to the following conditions:

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Amended Act, 2015, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the Assistant Director, Dept. of Geology and Mining, Coimbatore letter Rc.No.857/Mines/2021, Dated: 01.02.2022 the following conditions have been incorporated in the Mining Plan.
- a) No hindrance should be caused to the adjacent pattadars and public
- b) A safety distance of 7.5 meters should be provided for the adjacent patta lands from the lease applied area.
- c) A safety distance of 50 meters should be provided to the EB line passing on the Western and Southern side of the applied area.
- (v) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

Encl: Two copies of Approved Mining Plan.


Assistant Director,
Dept. of Geology and Mining,
Coimbatore.

Copy submitted to:
The Director of Geology and Mining, Chennai-32.

**MINING PLAN AND PROGRESSIVE QUARRY
CLOSURE PLAN FOR ARASAMPALAYAM
ROUGH STONE AND GRAVEL QUARRY**



(PREPARED UNDER RULES 41 & 42 AS AMENDED IN TAMILNADU MINOR MINERAL CONCESSION RULES, 1959)

Patta Lands / Lease Period - Five Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 1.30.0 Ha
S.F.NO : 360/1B (Part)
VILLAGE : ARASAMPALAYAM
TALUK : KINATHUKADAVU
DISTRICT : COIMBATORE
STATE : TAMIL NADU

FOR

APPLICANT

Tmt.S.Manonmani,

W/o. Somasundaram,

No. 7/73, Karachery, Arasampalayam,

Kinathukadavu,

Coimbatore District,

Tamil Nadu State - 641 201.

PREPARED BY

P. Viswanathan, M.Sc.,

Qualified Person

Regd. Off. No.17, Advaita Ashram Road,

Alagapuram, Salem District - 636 004.

Cell: +91 94422 78601 & 94433 56539.

E-mail: infogeoexploration@gmail.com

S.Manonmani,
W/o. Somasundaram,
No. 773, Karachery, Arasampalayam,
Kinathukadavu,
Coimbatore District,
Tamil Nadu State – 641 201.



CONSENT LETTER FROM APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Arasampalayam Rough stone and Gravel Quarry in S.F.No. 360/1B (Part) over an extent of 1.30.0ha of Patta lands in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State has been prepared by

P. Viswanathan, M.Sc.,
Qualified Person

I request to the Assistant Director, Department of Geology and Mining, Coimbatore District to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

P. Viswanathan, M.Sc.,
Regd. Off. No. 17,
Advaitha Ashram Road,
Alagapuram, Salem District – 636 004,
Cell: +91 94422 78601 & 94433 56539.

I hereby undertake that all the modifications, if any made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the Applicant

S.Manonmani

Place: Coimbatore

Date: 02.02.2022

S.Manonmani,
W/o. Somasundaram,
No. 7/73, Karachery, Arasampalayam,
Kinathukadavu,
Coimbatore District,
Tamil Nadu State – 641 201.



DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Arasampalayam Rough stone and Gravel Quarry in S.F.No. 360/IB (Part) over an extent of 1.30.0ha of Patta lands in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State has been prepared in full consultation with us.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of the Applicant

S. Manonmani

S.Manonmani

Place: Coimbatore

Date: 02.02.2022



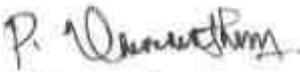
CERTIFICATE

Certified that I am, **P. Viswanathan**, M.Sc., having an office at Regd. Off. No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, holding a Post Graduate Degree in Geology (M.Sc. Applied Geology) from Periyar University, Salem and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) a post graduate degree in Geology granted by a university established” and (I)(b) “Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree”. Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I am prepare this Mining Plan and Progressive Quarry Closure Plan in Respect of Arasampalayam Rough stone and Gravel Quarry in S.F.No.360/1B (Part) over an extent of 1.30.0ha of Patta lands in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State for **Tmt.S.Manonmani**, W/o. Somasundaram, residing at No. 7/73, Karachery, Arasampalayam, Kinathukadavu, Coimbatore District, Tamil Nadu State – 641 201, Tamil Nadu State. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person


P. Viswanathan, M.Sc.,

Place: Salem

Date: 07.02.2022

P. Viswanathan, M.Sc.,

Regd. Off. No. 17,

Advaita Ashram Road,

Alagapuram, Salem District – 636 004.

Cell: +91 94422 78601 & 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Arasampalayam Rough stone and Gravel Quarry in S.F.No.360/1B (Part) over an extent of 1.30.0ha of Patta lands in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State has been prepared for

Tmt.S.Manonmani,

W/o. Somasundaram,

No. 7/73, Karachery, Arasampalayam,

Kinathukadavu,

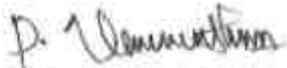
Coimbatore District,

Tamil Nadu State – 641 201.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person


P. Viswanathan, M.Sc.,

Place: Salem

Date: 07.02.2022

P. Viswanathan, M.Sc.,
Regd. Off. No. 17,
Advaitha Ashram Road,
Alagapuram, Salem District – 636 004.
Cell: +91 94422 78601 & 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Arasampalayam Rough stone and Gravel Quarry in S.F.No.360/1B (Part) over an extent of 1.30.0ha of Patta lands in Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State has been prepared for

Tmt.S.Manonmani,
W/o. Somasundaram,
No. 7/73, Karachery, Arasampalayam,
Kinathukadavu,
Coimbatore District,
Tamil Nadu State – 641 201.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

P. Viswanathan
P. Viswanathan, M.Sc.,

Place: Salem
Date: 07.02.2022

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**MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR
ARASAMPALAYAM ROUGH STONE AND GRAVEL QUARRY**

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This Mining Plan and Environment Management Plan are prepared for **Tmt.S.Manonmani**, W/o. Somasundaram, residing at No. 7/73, Karachery, Arasampalayam, Kinathukadavu, Coimbatore District, Tamil Nadu State – 641 201.

The applicant applied for Rough stone and Gravel quarry over an extent of 1.30.0 Ha of Patta lands in S.F.No.360/1B (Part) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State under Rules 19 (1) & 20 of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the Assistant Director, Department of Geology and Mining, Coimbatore District and passed a Precise Area Communication letter vide **Rc.No.857/Mines/2021, Dated:01.02.2022** to submit Mining Plan for the approval in Department of Geology and Mining, Coimbatore District and obtain Environmental Clearance from the SEIAA, Chennai, Tamil Nadu State, with the conditions to provide:

1. No hindrance shall be caused to the adjacent patta lands and Public while Rough Stone and Gravel quarry operation.
2. A safety distance of 7.5 meters should be provided to the adjacent Patta lands.
3. A safety distance of 50 meters should be provided to the Low tension power line passing on the West and Southern side of the lease applied area.
4. Quarrying should be done only in the remaining areas leaving a safety distance in the area of the field numbers seeking permission. Penalties will be levied and action will be taken to cancel the lease if quarrying is found to be beyond the boundaries of the leasing areas.
5. The Child labour should not be engaged in the quarry works.

(Please refer Annexure No – I).

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12.13.2011 in Special Leave Petition SLP (C) No.19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior environmental clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less then 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state notified by MoEF as prescribed procedure under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the Mining Plan, Environmental Management Plan and Progressive Quarry Closure Plan for approval and subsequent submission of Form-I, Form-IM and Pre feasibility report to obtain environmental clearance from the SEIAA, Chennai, Tamil Nadu State, Rough stone and Gravel quarry. This mining plan is prepared by considering the Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendment and judgments till 24.01.2019.

Short Notes of Mining Plan:

- a. Village Panchayat - Arasampalayam
- b. Panchayat Union - Kinathukadavu
- c. The Geological Resources are **3,25,000m³** of Rough stone and **26,000m³** of Gravel in the entire area.
- d. The Total Mineable Reserves are **38,925m³** of Rough stone and **6,794m³** of Gravel in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be excavate are **38,925m³** of Rough stone for five years and **6,794m³** of Gravel for first three years in the entire area.
- f. Total extent of the lease applied area = 1.30.0 Ha.
- g. Topography of the area = The area exhibits plain topography
- h. Proposed Depth of mining = 27m (2m Gravel + 25m Rough stone) below ground level
- i. Mining Plan Period = Five years
- j. It is a fresh lease application.
- k. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow Jack hammer drilling, slurry blasting.
- l. Type of machineries proposed in the quarrying operation is given below:
Excavators attached with rock breaker (Rental Basis).
Jack hammer, Compressor (Diesel drive) (4 Jack hammer capacity) (Rental Basis).
- m. No trees will be uprooted due to this quarrying operation.

- n. The approach road from the main road to quarry area is already existence and same will be maintained in a good condition for the haulage of quarry materials.
- o. There is No Export of this Rough stone and Gravel.
- p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance, places of worships is marked and enclosed as Plate Nos. IA & IB.
- q. The lease applied area is about 1.30.0 Ha bounded by eleven corners; the corners are designated as 1-11 Clockwise from the Southern corner the Co – ordinates for the all the corners are clearly marked in the Quarry Lease and Surface Plan enclosed as Plate No. II.
- r. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III and IV.
- s. General conditions will not be applicable for the proposed area. The area applied for lease is 10Km away from the,
- Interstate Boundary,*
 - Protected area under wild life protection ACT, 1972,*
 - Critically polluted areas as identified by CPCB,*
 - Notified Eco sensitive areas.*
- t. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 14 employees are deploying in the quarrying operation.
- v. Total Cost of the project is about **Rs.28,86,000/-**.
- w. Infrastructures around the lease applied area given below in the table:

TABLE-1

Particulars	Location	Approximate aerial distance and direction from lease applied area
Nearest Post Office	Myleripalayam	3km – Southwest
Nearest School	Chettipalayam	4km – Northwest
Nearest Dispensary	Panappatti	6km – East
Nearest Town	Kinathukadavu	8km – Southwest
Nearest Police Station	Chettipalayam	4km – Northwest
Nearest Hospital	Myleripalayam	3km – Southwest
Nearest D.S.P. Office	Coimbatore	18km – Northwest
Nearest Railway Station	Kinathukadavu	8km – Southwest
Nearest Airport	Coimbatore	18km – Northwest
Nearest Seaport	Kochi	134km – Southwest
District Head quarters	Coimbatore	18km – Northwest

2.0 GENERAL INFORMATION

2.1 a) Name of the Applicant : Tmt.S.Manonmani,
W/o. Somasundaram.

b) Address of the Applicant (With Phone No and Aadhaar No)

Address : No.7/73, Karachery, Arasampalayam,
Kinathukadavu,
Coimbatore District.

Pin Code : 641 201

Mobile No : +91 98657 55889

Aadhaar No : 4504 0942 2307

Email ID : sakthivelanvanbluemetals151@gmail.com

c) Status of the Applicant (Individual / Company / Firm):

The applicant is an Individual.

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Coimbatore District vide Rc.No.857/Mines/2021, Dated: 01.02.2022 to submit approved mining plan and to obtain Environmental Clearance from the SEIAA, Chennai, Tamil Nadu State.

c) Period of permission / lease to be granted:

Five Years.

d) Name and address of the Qualified Person who preparing the Mining Plan:

Name : P.Viswanathan, M.Sc.,
Qualified Person

Address : Reg. No.17,
Advaitha Ashram Road,
Alagapuram, Salem District – 636 004.

Telephone : 0427- 2431989 (Office)

Cell No : +91 94422 78601 & 94433 56539

Email : infogeoexploration@gmail.com

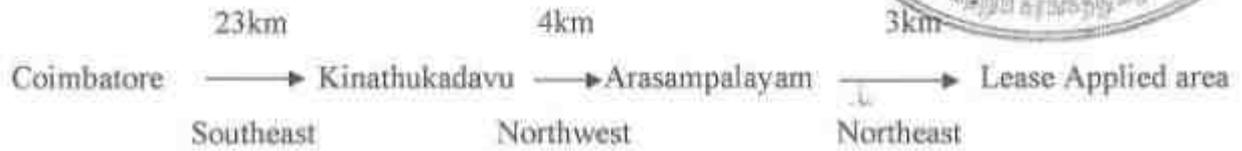
(Refer Annexure Nos. IX and X).



3.0 LOCATION

a) Details of the area with location map:

The lease applied area is about 18km Southeastern side of Coimbatore town and 8km Northwestern side of Kinathukadavu town, the lease applied area located 3km Northeastern side of Arasampalayam Village at a distance of 3km Northeastern side.



Location Map of the Lease Applied Area

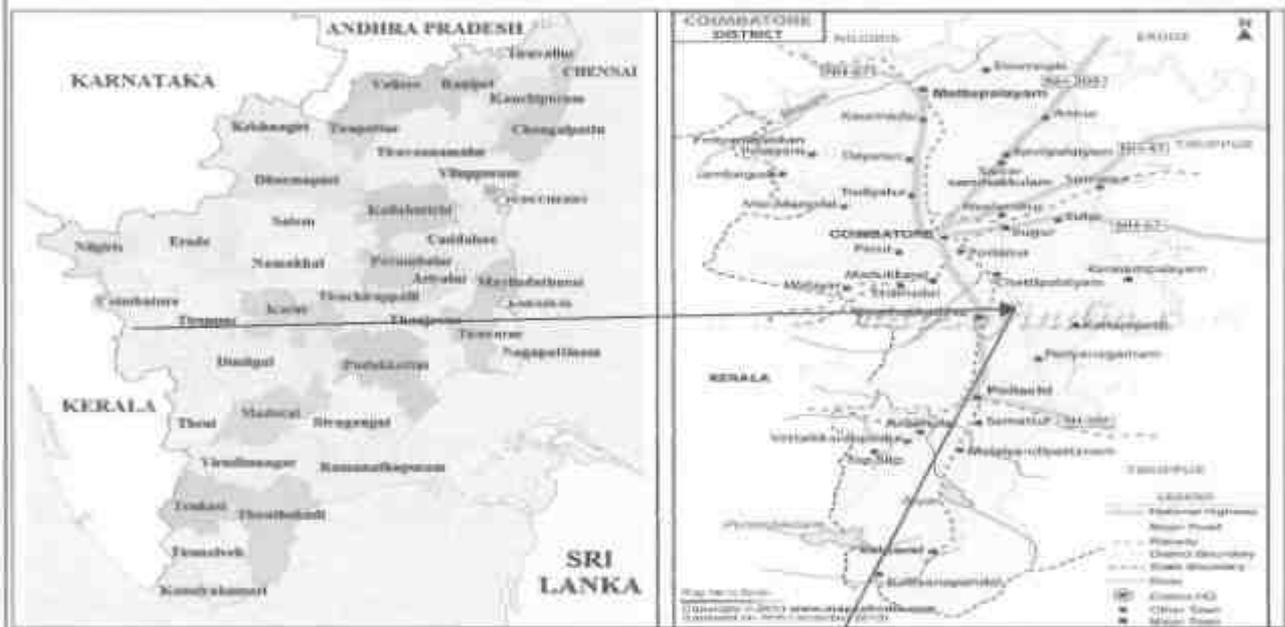


TABLE-2

District	Taluk	Village	S.F. Nos.	Lease Applied Area in Ha	Patta No.
Coimbatore	Kinathukadavu	Arasampalayam	360/1B (P)	1.30.0	953
Total Extent				1.30.0 Ha	

b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta lands (Barren land) which is not fit for vegetation/ Cultivation.

c) Ownership / Occupancy of the applied area (surface right):

It is a Patta lands. Registered in the name of the Thiru.Somasundaram, vide Patta No.953 (Refer Annexure Nos. IV to VI). The applicant has obtained consent from the pattadars for the period of ten years from the date of execution of lease deed (Refer Annexure No. VII).

d) Topo sheet No. with latitude and longitude:

The lease applied area falls in the Topo sheet No: 58 - F/01 Latitude between: 10°52'33.75"N to 10°52'38.99"N and Longitude between: 77°02'48.41"E to 77°02'53.53"E on WGS datum-1984. Please refer the Plate Nos. I to II.

e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach (metal) road is situated on the Southern side which connects the Village road situated at 570m on the Eastern side of the area.

Multiple road access is available from the quarry to state highways and National Highway, no villages are enrooted hence the traffic density is not much more due to the transportation of Rough stone.

The approach road from the quarry is already existed and the same will be utilized for haulage and maintained during the entire lease period, tree sapling will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Coimbatore – Pollachi which is about 1km on the Western side of the lease applied area.

PART – A

4.0 GEOLOGY AND MINERAL RESERVES

4.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is exhibits plain topography. The area has gentle sloping towards Southern side. The altitude of the area is 380m (max) above Mean Sea level. The area is covered by 2m thickness of Gravel formation. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the nearby existing quarry pit.

The Water table is found at a depth of 70m in summer and at 65m in rainy seasons. Average annual rainfall is about 689mm.

Topographical View of lease applied area

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale of the Charnockite body is $N30^{\circ}E - S30^{\circ}W$ with dipping towards $SE60^{\circ}$.

The general geological sequences of the rocks in this area are given below:

AGE	FORMATION
↑ Recent	- Quaternary Formation (Gravel)
-----Unconformity-----	
Archaean	- Charnockite
Peninsular Gneiss complex	

4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the nearby existing quarry pit.

4.3 Estimation of Reserves:**a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000 FEB 2022**

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties and commercial aspects etc.,

Totally two sections have been drawn, two sections are drawn Length wise as (X-Y) and other another one cross sections are drawn Width wise as (A-B) to cover the maximum area considered for calculation upto 27m depth.

The Topographical, Geological Plan and Sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 scale (please refer the Geological Plan and Sections Plate No. III). As the sale of Rough stone is in terms of cubic meters (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III):

The Geological Resources of Rough Stone and Gravel Quarry are calculated upto a maximum depth of 27m (2m Gravel + 25m Rough Stone) below from the existing ground profile. The total Geological resources are calculated by area method. The total available geological resources are given below.

Total Extent of the area	:	1.30.0 Hectares
Area in square meter (1.30.0 x 10,000)	:	13,000m ²

GRAVEL:

Depth of Estimation of Resources	:	2m
Total Geological Resources (Area x Depth)	:	13,000m ² x 2m
	:	26,000m ³

ROUGH STONE:

Depth of Estimation of Resources	:	25m
Total Geological Resources (Area x Depth)	:	13,000m ² x 25m
	:	3,25,000m ³
Total Geological Resources of Gravel	:	26,000m ³
Total Geological Resources of Rough Stone	:	3,25,000m ³

Mineable Reserves:

The Mineable reserves are calculated after leaving the safety distance and bench loss to a maximum depth of 27m below ground level.

TABLE-3

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves in Rough stone (m ³)	Gravel (m ³)
XY-AB	i	79	43	2	-	6794
	ii	79	43	5	16985	-
	iii	69	33	5	11385	-
	iv	59	23	5	6785	-
	v	49	13	5	3185	-
	v	39	3	5	585	-
Total					38925	6794

Total Mineable Recoverable Reserves of Rough stone @ 100% : **38,925m³**

Total Mineable Reserves of Gravel : **6,794m³**

The mineable reserves have been computed as **38,925m³** of Rough stone at the rate of 100% recovery and **6,794m³** of Gravel upto a depth of 27m (2m Gravel + 25m Rough Stone) below from the general ground level for a period of five years.

5.0 MINING**5.1 Method of mining (opencast / underground):**

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act - 1952.

**5.2 Mode of working (mechanized, semi mechanized, manual):**

The Rough stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow Jack hammer drilling, slurry explosives in blasting, excavation, loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and slurry explosives blasting, hydraulic excavators are used for loading the Rough stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3 Proposed Bench Height and Width:

The Charnockite is hard and compact rock, the bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

5.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tippers to the needy customers. The Composite year wise Development and production plan and sections indicating the Pit lay out, Green belt development are shown in Plate No-III.

Yearwise development and Production

TABLE-4

YEARWISE RESERVES							
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserves in Rough stone (m ³)	Gravel (m ³)
XY-AB	I	i	28	43	2	-	2408
		ii	26	43	5	5590	-
		iii	16	33	5	2640	-
		Total					8230	2408
	II	i	26	43	2	-	2236
		ii	26	43	5	5590	-
		iii	26	33	5	4290	-
		Total					9880	2236
	III	i	25	43	2	-	2150
		ii	27	43	5	5805	-
		iii	27	33	5	4455	-
		Total					10260	2150
	IV	iv	59	23	5	6785	-
		Total					6785
	v	v	49	13	5	3185	-
		vi	39	3	5	585	-
		Total					3770
	Grand Total						38925	6794

The Total proposed Reserves of Rough stone @ 100% : 38,925m³

Total proposed Reserves of Gravel : 6,794m³

The Recoverable reserves have been computed as 38,925m³ of Rough stone at the rate of 100% recovery and 6,794m³ of Gravel for the five years upto a depth of 27m (2m Gravel + 25m Rough Stone) below ground level for a period of five years.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of Director General of Mine Safety, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load = 6m³ (approx.)
 Total No of Working days = 300 Days per year
 Total Rough stone to be removed during the plan period = 38,925m³
 Hence total Lorry loads per day = 38,925m³/6m³
 = 6,488 Lorry loads
 = 6,488/5 years
 = 1,298/300 days
 Rough Stone = 4 – 5 Lorry loads per day

Total Gravel to be removed during the plan period	=	6,794m ³
Hence total Lorry loads per day	=	6,794m ³ /40m ³
	=	1132 Lorry load
	=	1132/3 years
	=	377/300 days
Gravel load per day	=	1 to 2 Lorry load per day

Working hours = 8.30 am to 5.30 pm (with 12.30-1.30 P.M. lunch break)

Machineries to be used:

For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE-5

I. DRILLING MACHINE:

S. No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack hammer	2	30-35	1.2m to 2.0m	Compressed air
2	Compressor	1	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	1	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Tipper	1	20 tonnes	Diesel Drive

5.5 Disposal of Overburden/Waste:

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. The excavated Rough stone (100%) will be directly loaded into tippers to the needy customers. There is no Waste anticipated during this plan period hence, disposal of overburden/waste does not arise.

5.6 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and Environment considerations:

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for five years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

TABLE-6

Length (m) (max)	Width (m) (max)	Depth (m) (max)
79	43	27m below ground level

Greenbelt has proposed on the safety zone by planting Neem, Pongamia Pinnata, Casuarina, etc., trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate Nos. III & IV.

It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

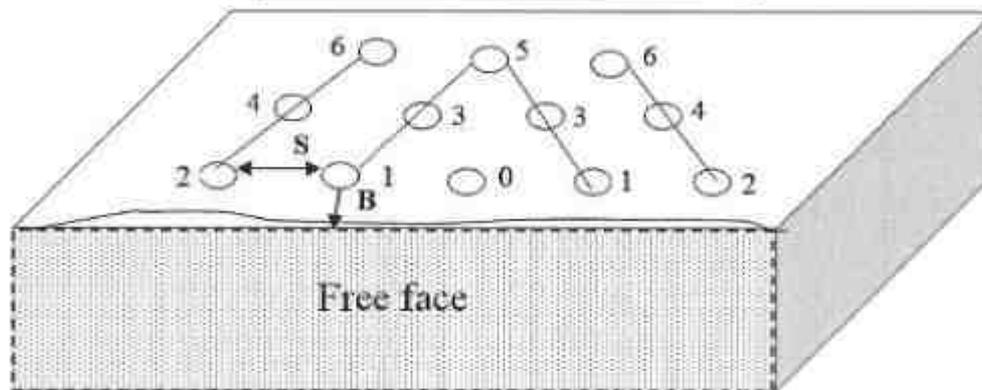
There is no waste anticipated during the entire life of quarry. Hence, backfilling is not possible in this quarry. After completion of quarry operation, the quarry pit will be allowed to collect the seepage and rainwater, the water storage will be kept as temporary reservoir for charging the nearby wells and the storage water will be used for afforestation purpose. The quarry pit will be fenced with barbed wire fencing to prevent inadvertent entry of public and cattle (Refer Plate No. IV).

6.0 BLASTING**6.1 Blasting pattern:**

The quarrying operation is proposed to be carried out by Mechanized Opencast Method in conjunction with conventional method of mining using Jack hammer drilling and slurry blasting of shattering effect for loosen the Rough stone.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Diameter of hole	:	30-32mm
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Pattern of hole	:	Zigzag – Multi-rows
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	25millisecond relays
Detonating fuse	:	“Detonating” Cord

BLASTING PATTERN DRAWING**Staggered “V” Pattern of Blasting Design**

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day	=	26 Holes

6.2 Type of explosives to be used:

Small Dia. 25mm slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in Rough stone for easy excavation and to control fly rock.

Delay detonators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day:

No of Holes	= 26 Holes
Yield	= 78 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 13 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 12.00 – 12.30p.m (whenever required)

6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be have the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the Explosives Agencies will take it out back the remaining quantity of Explosives. The magazine is available at the quarry site to temporarily store the explosives.

7.0 MINE DRAINAGE**7.1 Depth of water table (based on nearby wells and water bodies):**

The Water Table in the area is 70m in summer season and 65m in rainy season which is observed from the nearby bore wells and the data obtained from existing private boreholes. The lease area is fully covered by Massive Charnockite formation. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE-7

Type	Distance & Direction	Location
Bore Well	40m Eastern side	10°52'33.88"N 77°02'52.29"E

7.2 Arrangements and places where the mine water is finally proposed to be discharged:

Quarry operations are confined well above the water table during the entire lease period. If water is encountered due to rain water and seepage, the same will be pumped out by 5HP water pumps to the Greenbelt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

8.0 OTHER PERMANENT STRUCTURES (also shown in the map)**8.1 Habitations/ Villages natham:**

There is no approved habitation within 300m radius from the lease applied area.

8.2 Power Lines (HT/LT):

There is an EB LT line passing on the West and Southern side of the applied area, a safety distance of 50m respectively has been provided to the power line. There is no EB(HT) line or Housing area situated within 50m radius of the area.

8.3 Water bodies (river, ponds, lake, odai, canal, etc.,):

Odai is passing on the western side of the lease applied area. Hence, safety distance has been provided. There is no other River, Pond, Lake, Odai, Canal located within 50m radius of the lease applied area.

8.4 Archaeological / historical monuments:

There is no Archaeological / historical monuments within 300m radius from the lease applied area.

8.5 Road (NH, SH):

The Nearest National Highway (NH - 83) Coimbatore – Dindigul is situated about 4km on the Southwestern side of the lease applied area.

The State Highway (SH-163) Palladam – Othakalmandapam Road is about 4km on the Northwest side of the lease applied area.

8.6 Places of worships:

There is no place of worships within the radius of 300m from the lease applied area.

8.7 Reserved forest / forest / social forest / wild life sanctuary etc.,:

There is no reserved forest / forest / social forest / wild life sanctuary etc., within radius of 1km of the lease applied area.

SALIENT FEATURES						
S. No.	Salient Features Present around site	Prescribed safety distance	If any present within Prescribed distance it's actual distance and direction from the area			
1.	Railways, Highways, Reservoirs or Canal	50m	None of the above situated within 50m radius.			
2.	Village Road	10m	No Village Road is passing within 10m radius of the lease applied area.			
3.	Habitation / Village	300m	There is no approved habitation within 300m radius from the lease applied area (Refer Plate No I-B).			
4.	Adjacent Patta land / Govt. Land	7.5m/50m	Direction	S.F.No.	Classification	Safety Distance
			North	360/1A1	Patta land	7.5m
			East	360/1B(P), 360/1C1 & 360/1C3	Patta land	7.5m
			South	360/2	Odai / EB Line	50m
			West	360/2		
(Refer Plate No. II).						
5.	Housing area, EB line (HT & LT Line)	50m	There is an EB LT line passing on the West and Southern side of the applied area, a safety distance of 50m respectively has been provided to the power line. There is no EB(HT) line or Housing area situated within 50m radius of the area.			
6.	Boundaries of the permitted area	7.5m/50m	The boundaries of the permitted areas is as follows: North – S.F.No. 360/1A1 East – S.F.Nos. 360/1B(P), 360/1C1 & 360/1C3 South – S.F.No.360/2 West – S.F.No.360/2 (Refer Plate No. II).			
7.	Reserve forest	60m	There is no reserved forest located within the radius of 60m from the lease applied area. (Refer Plate No. IA and IB).			
8.	Protected area / ECO sensitive area/Wild Life Sanctuary	10km	There is no ECO sensitive Zone/ Wild Life Sanctuary/ Critically Polluted Area/ HACA/ CRZ located within 10km radius of the area. (Refer Plate No. IA).			

9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES**9.1 Employment potential (skilled, semi skilled, un skilled):**

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous Mines Regulations, 1961.

a. Skilled labour:

Mine Foreman	:	1
Blaster/mate	:	1
Excavator – Operator & Driver	:	2
Jack hammer operator	:	4

b. Semi-skilled:

Security	:	1
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c. Unskilled:

Labour & Helper	:	2
Co-operator and Cleaner	:	3
Total	:	14

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

9.2 Welfare Measures:**a. Drinking Water:**

Packaged drinking water is available from the nearby approved water vendors in Chettipalayam which is about 4km on the Northwestern side of the lease applied area.

b. Sanitary Facilities:

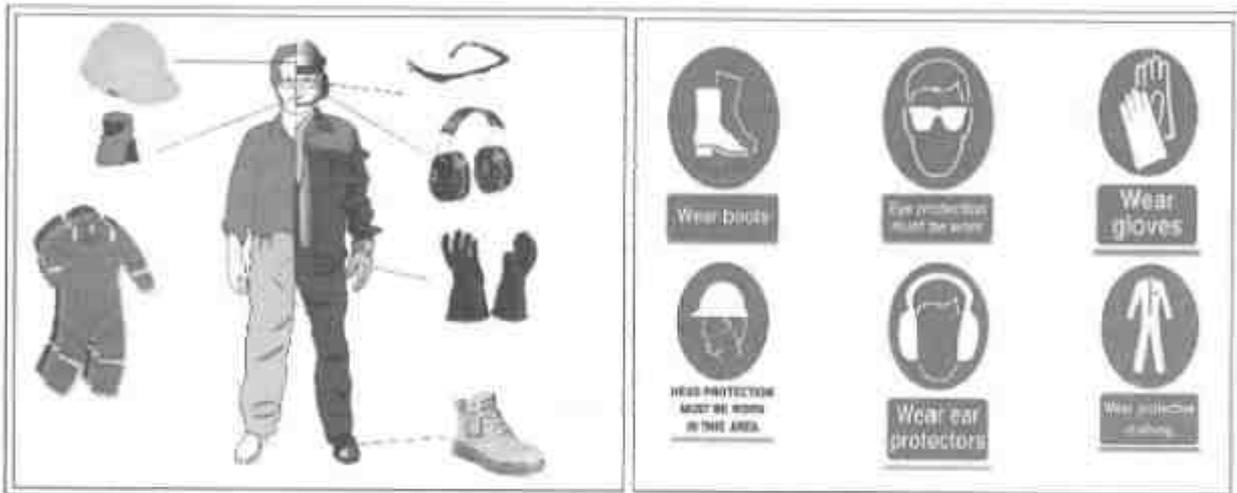
Hygienic modern Sanitary Facilities will be constructed as semi permanent structure and it will be maintained periodically as hygienic.

c. First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman. Personal manager will be in charge of first aid and injured person will be taken to the hospital by the applicant vehicle. Hospital is available in Kinathukadavu located at a distance of 8km on the Southwestern side.

**d. Labour Health:**

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e. Precautionary safety measures to the labourers:

- Helmets,
- Mine Goggles,
- Ear plugs,
- Ear muffs,
- Dust mask,
- Reflector jackets,
- Safety Shoes

All personnel protective devices will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

PART – B**10.0 ENVIRONMENT MANAGEMENT PLAN****10.1 Existing Land use pattern:**

The quarry lease applied area exhibits plain topography. The area is a dry barren land devoid of Agriculture and Habitations. The lease applied area has utilized only for quarry operation in earlier.

LAND USE TABLE-8

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area under Quarrying	Nil	0.34.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.14.6
Unutilized Area	1.30.0	0.78.4
Grand Total	1.30.0	1.30.0

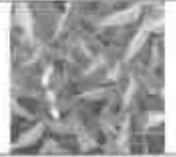
10.2 Water Regime:

It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid surface run-off rain water entering into the pit.

The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climate change.

10.3 Flora and Fauna:

TABLE-9

S.No	Name of the plant (Scientific)	Family Name	Common Name		Picture
1.	<i>Prosopis juliflora</i>	Fabaceae	Seemai karuvelam	Tree	
2.	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree	
3.	<i>Cocos nucifera</i>	Arecaceae	Thennai	Tree	
4.	<i>Opuntia bentoni</i>	Cactaceae	Cactus/Kalli	Shrub	
5.	<i>Borassus flabellifer</i>	Arecaceae	Panai	Tree	
6.	<i>Acacia nilotica</i>	Fabaceae	Babul, Karuvelam	Tree	

List of Fauna

S.No.	Scientific Name	Common Name	Picture
1.	<i>Capra aegagrus hircus</i>	Goat	
2.	<i>Funambulus palmarum</i>	Squirrel	
3.	<i>Bos taurus</i>	Cow	
4.	<i>Danaus plexippus</i>	Striped tiger	
5.	<i>Corvus leuillanti</i>	Crow	

**10.4 Climatic Conditions:**

The area receives rainfall of about 689mm/annum and the rainy season is mainly from Oct - Dec during monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 20°C.

10.5 Human settlement:

There are few villages located in this area within 5km radius; the approximate distance and population are given below:

TABLE-10

S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Myleripalayam	3km – Southwest	5,000
2.	Pachapalayam	4km – Northeast	3,000
3.	Arasampalayam	3km – Southwest	1,400
4.	Karacheri	2km – Southeast	1,500

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Kinathukadavu located at a distance of 8km on the Southwestern side of the area.

10.6 Plan for air, dust suppression:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the slurry blasting, Jack hammer drilling, loading and unloading during the Rough stone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed on the non quarrying area.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigative measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around Rs.52,000/year.

10.7 Plan for Noise level control:

The noise level increased due to the Drilling, Blasting, Excavation and Transportation.

Engineering Noise control:

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low – noise equipment's is proposed to be deployed for the Rough stone quarry operation.
- Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly instructed to move the vehicle during the transportation not exceed 40km per hour.
- Sentries with flags & whistle will posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as slurry explosives, ordinary safety fuse will be used for Rough stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs.2,000/Year**.

10.8 Environment impact assessment statement describing impact of mining on the five years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the Environment impact studies will be conducted as per EIA notification issued by MoEF&CC. It is B2 Category mine. The estimated budget would be around **Rs.3,80,000/-**.

10.9 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%).

10.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan proposed only to a maximum depth of 27m below ground level has been envisaged as workable depth for safe & economic mining during entire lease applied area. There is no waste generated hence, backfilling is not possible. Hence, the quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. The barbed wire fencing cost would be around **Rs.1,56,000/-**.

10.11 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone all along the boundary barrier has been identified to be utilized for Greenbelt development. Appropriate native species of Neem, Pongamia Pinnata, Casuarina, etc., trees will be planted in a phased manner as described below.

TABLE-11

Years	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	32	80	292	Neem, Pongamia Pinnata, Casuarina, etc.,	26
II	32	80	292		26
III	32	80	292		26
IV	32	80	292		26
V	32	80	292		26

Nearly 1460sq.m area is proposed to use under Greenbelt by planting 32 Number of tree saplings during every year with an anticipated survival rate of 80% (Please refer Plate No. III). The estimated budget for plantation and maintenance of Greenbelt development would be around **Rs.16,000/-** for the period of five years.

The Greenbelt Development will be formed in around the approach road and nearby village roads of the lease applied area. The cost would be around **Rs.10,000/-**.

10.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the entire quarrying period:

TABLE-12

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs.3,80,000/-** for the period of five years.

A. Project / investment / Operational cost:		
i) Land cost	The Land value as per the Government Guideline land cost is about, Rs.10,76,000/ha, hence the total land cost is calculated about 1.30.0 Ha X Rs.10,76,000/- = Rs.13,98,800/- i.e.Rs.13,99,000/- (source: https://tnreginet.gov.in/portal/)	= Rs.13,99,000/-
ii) Machinery to be used	The following machineries are proposed to meet out the productions. Excavator attached with rock breaker, Tippers, Tractor mounted compressor with Jack hammer and loose tools (Rental Basis)	= Rs.4,00,000/-
iii) Refilling/ Fencing	Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattles cost would be around	= Rs.1,56,000/-
iv) Labourers shed	Labour sheds will be constructed as semi permanent structure. The cost would be around	= Rs.1,00,000/-
v) Sanitary facility	Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around	= Rs.40,000/-
vi) Others items	First aid room & accessories	= Rs.30,000/-
vii) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around	= Rs.50,000/-
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around	= Rs.50,000/-
ix) Safety kit	All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around	= Rs.50,000/-
x) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around	= Rs.70,000/-
xi) Garland drains Construction	Construction of garland drains to divert surface runoff from virgin area away from mining area	= Rs.78,000/-
xii) Greenbelt etc.	Greenbelt program will be carried out in the boundary barriers the cost would be around	= Rs.16,000/-
	Greenbelt program will be carried out in the approach road and nearby village roads	= Rs.10,000/-
	Total Operational Cost	= Rs.24,49,000/-

B. EMP Cost:- (Per year)	
Air Quality monitoring	Rs.52,000/-
Water Quality Sampling	Rs.18,000/-
Noise Monitoring	Rs. 2,000/-
Ground Vibration test	Rs. 4,000/-
Total Cost	Rs.76,000/-
Total EMP Cost for the five years period is Rs.3,80,000/-	
Description	Amount (Rs.)
A. Operational Cost	24,49,000
B. EMP Cost	3,80,000
Total Project Cost (A+ B)	28,29,000
The applicant indents to involve corporate environment responsibilities (CER) activity like Water Purifier and Medicine Storage rack facilities to the nearby Dispensary and Water Purifier facility to the nearby Govt. School at 2.0% from the total project cost. The Cost would be around Rs.57,000/- .	57,000
Total Cost	28,86,000
The Total cost would be around twenty eight lakhs and eighty six thousands only.	

11.0 PROGRESSIVE QUARRY CLOSURE PLAN**11.1 Introduction:**

The Progressive Quarry Closure Plan for Rough stone and Gravel quarry over an extent of 1.30.0ha of Patta lands in S.F.No.360/1B (Part) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu State has been prepared for **Tmt.S.Manonmani**, W/o.Somasundaram, residing at No. 7/73, Karachery, Arasampalayam, Kinathukadavu, Coimbatore District, Tamil Nadu State – 641 201.

11.2 Present Land use pattern:LAND USE TABLE-13

Description	Present area in (ha)
Area under Quarrying	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized Area	1.30.0
Grand Total	1.30.0

11.3 Method of Mining:

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height for Rough stone.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

11.4 Mineral Processing Operations:

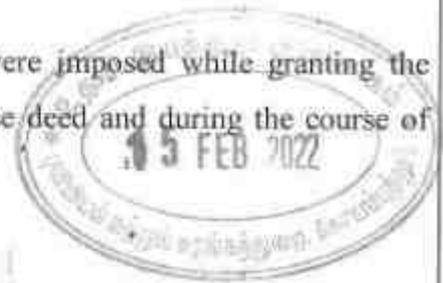
The quarried out Rough stone will be transported by the 20tons capacity Tipper to the needy crushers. Splitting of rock mass of considerable volume from the parent rock mass by Jack hammer drilling and blasting, hydraulic excavators are used for loading the Rough stone from pithead to the needy crushers.

11.5 Reasons for closure:

As the mineral is not going to be exhausted during the proposed plan period no immediate closure is planned and sufficient reserves are available to carry on the activities. The reason for closure will be discussed in the ensuing mining plan.

11.6 Statutory obligations:

The applicant ensures to comply all the conditions were imposed while granting the precise area communication letter before the execution of lease deed and during the course of quarry operations.

**11.7 Progressive quarry closure plan preparation:**

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the preparation of progressive quarry closure plan.

Name : **P. Viswanathan, M.Sc.**
Qualified Person

Address : Reg. No.17, Advaita Ashram Road,
Alagapuram, Salem District – 636 004.

Telephone : 0427- 2431989 (Office)

Cell No : +91 94422 78601 & 94433 56539

Applicant will himself implement the closure plan; no outside agency will be involved.

11.8 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:

Mining Plan and Progressive quarry closure plan are being submitted for the first time. It will be reviewed after Ten Years and review of implementation will be given in the next mining plan.

11.9 Closure Plan:**(i) Mined Out Land:**

At the end of mining plan period, about 0.34.0ha of area will be mined out. Land use at various stages is given in the table below:

LAND USE TABLE-14

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area under Quarrying	Nil	0.34.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.14.6
Unutilized Area	1.30.0	0.78.4
Grand Total	1.30.0	1.30.0

The Greenbelt Development will be formed in around the approach road and nearby village roads of the lease applied area.

(ii) Water quality management:

Following control measures will be adopted for controlling water pollution

- Construction of garland drains to divert surface run-off from mining area away from mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture land.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

(iii) Air Quality Management:

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face-mask, earplug/ muffs.

For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

(iv) Top Soil and Waste Management:

There is no topsoil or waste generated during the proposed plan period. The entire quarried out Rough stone and Gravel is utilized (100%). Hence, waste management does not arise.

(v) Disposal of mining machinery:

All the machineries will be engage on rental basis. Hence, disposal or decommissioning of mining machinery does not arise.



(vi) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be provide before blasting time to prevent any accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

(vii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete quarrying operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the approach road and nearby village roads of the lease applied area.

(viii) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Quarry roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Quarry office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, quarrying operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The Quarry Lease is granted for a period of maximum five years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(x) Time Scheduling for Abandonment:

The lease applied area has enormous potential for continuance of operations even after the expiry of the lease period. The details of time schedule of all abandonment will be given at the time of final closure plan.

(xi) Abandonment Cost:

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive quarry closure activities during the plan period, cost is assessed as given below:

LAND USE TABLE-15

ACTIVITY		YEAR					RATE	COST (Rs.)
		I	II	III	IV	V		
Plantation under safety zone	Nos.	32	32	32	32	32	@100 Rs	16,000/-
	Cost	3200	3200	3200	3200	3200		
Plantation in the approach road and nearby village roads	Nos.	20	20	20	20	20	Per sapling	10,000/-
	Cost	2000	2000	2000	2000	2000		
Wire Fencing (In Mtrs) 520 Mtrs		156000	-	-	-	-	@300 Rs Per Meter	1,56,000/-
Garland drain (In Mtrs) 260 Mtrs		78000	-	-	-	-	@300 Rs Per Meter	78,000/-
TOTAL								2,60,000/-

12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

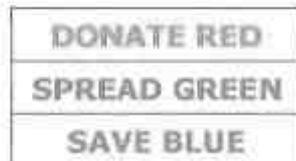
This Mining Plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Concerned Department.

Prepared by

P. Viswanathan
P. Viswanathan, M.Sc.,
Qualified person

Place: Salem

Date: 07.02.2022



This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: E 67/MINES/2021 dt 15-2-22
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the
incorporation of the particulars specified
in the letter of the commissioner of Geology
and Mining, Chennai dt No. 33037.C/2012
Dated 13.12.2012 and subjected to further
fulfillment of the condition laid down under
Tamilnadu Minor Mineral Concession Rules 1959

15/2/2022
ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT.

16/2/22

உதவி இயக்குநர், அலுவலகம்,
புவியியல் மற்றும் கரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலகம்,
கோயம்புத்தூர் - 18.

நாள்: 01.02.2022

ந.க.எண்.857/கனிமம்/2021

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - கிணத்துக்கடவு வட்டம் - அரசம்பாளையம் கிராமம் - புல எண்.360/1B (பகுதி)-ல் 1.30.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க திருமதி.S.மனோன்மணி என்பவருக்கு - குவாரி குத்தகை அனுமதி வழங்குவது - தொடர்பாக.

- பார்வை: 1. திருமதி.S.மனோன்மணி, க/பெ.சோமசுந்தரம், 7/73, காரச்சேரி, அரசம்பாளையம், கிணத்துக்கடவு கோயம்புத்தூர் என்பவரது விண்ணப்பம் நாள் 08.07.2021 மற்றும் 21.12.2021.
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 13.07.2021
3. சார் ஆட்சியர், பொள்ளாச்சி அவர்களின் கடித ந.க.எண். 1537/2021/அ2 நாள் 03.10.2021.
4. உதவி புவியியலாளர், புவியியல் மற்றும் கரங்கத்துறை, கோயம்புத்தூர் அவர்களின் தணிக்கை அறிக்கை நாள்: 31.01.2022.
5. இயக்குநர், புவியியல் மற்றும் கரங்கத்துறை, சென்னை கடிதம் எண். 1870/எம்.எம்-1/2020 நாள்: 12.08.2020.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம், 7/73, காரச்சேரி என்ற முகவரியில் வசிக்கும் திரு.சோமசுந்தரம் என்பவரின் மனைவி திருமதி.S.மனோன்மணி என்பவர் கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம் கிராமம், புல எண். 360/1B (பகுதி)-ல் 1.30.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

மேற்படி மனு தொடர்பாக, சார் ஆட்சியர், பொள்ளாச்சி மற்றும் கோயம்புத்தூர் புவியியல் மற்றும் கரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம், 7/73, காரச்சேரி என்ற முகவரியில் வசிக்கும் திரு.சோமசுந்தரம் என்பவரின் மனைவி திருமதி.S.மனோன்மணி

என்பவருக்கு கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம் கிராமம், புல எண். 360/1B (பகுதி)-ல் 1.30.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க சில நிபந்தனைகளுடன் பரிந்துரை செய்துள்ளார்கள்.



அனுமதி கோரும் புல எண் 360/1B ஆனது பட்டா எண். 953-ன் படி வேலுசாமி கவுண்டர் ஆவர்களின் மகன் சோமசுந்தரம் என்பவர் பெயரில் தனிப்பட்டவாக கிராம கணக்கில் தாக்கலாகியுள்ளது. பட்டாதாரர் திரு.சோமசுந்தரம் என்பவர் மனுதாரருக்கு மேற்படி பூமியில் சாதாரண கல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு ஆவண எண்.469/2021-ன் படி குத்தகை ஒப்பந்தம் மேற்கொள்ளப்பட்டுள்ளது. எனவே மேற்படி பூமியில் மனுதாரர் குவாரி குத்தகை உரிமம் பெற தகுதியுடையவர் ஆவார்.

எனவே, சார் ஆட்சியர், பொள்ளாச்சி மற்றும் உதவி புவியியலாளர், புவியியல் மற்றும் கரங்கத்துறை, கோயம்புத்தூர் ஆகியோரின் பரிந்துரைகளின் அடிப்படையில் கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம், 7/73, கார்ச்சேரி என்ற முகவரியில் வசிக்கும் திரு.சோமசுந்தரம் என்பவரின் மனைவி திருமதி.S.மனோன்மணி என்பவர் கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அரசம்பாளையம் கிராமம், புல எண். 360/1B (பகுதி)-ல் 1.30.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ஆம் ஆண்டு தமிழ்நாடு சிறுகனிம சலுகை விதிகளில் விதி 19(1) மற்றும் 20-ன் படி குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றும் நாளிலிருந்து 5 (ஐந்து) ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு குவாரி குத்தகை வழங்குவதற்குரிய நிலப்பரப்பாக (Precise Area Communication) கருதப்படுகிறது.

நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்களுக்கும் மற்றும் பொது மக்களுக்கும், எவ்வித இடையூறும் இன்றி சாதாரண கல் மற்றும் கிராவல் குவாரி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலத்தின் மேற்கு மற்றும் தெற்கு பகுதிகளில் செல்லும் மின்சும்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
4. அனுமதி கோரும் புல எண்களுக்குரிய விஸ்தீரணத்தில் பாதுகாப்பு இடைவெளி விட்டு மீதமுள்ள பகுதிகளில் மட்டுமே குவாரிப்பணி மேற்கொள்ள வேண்டும். குத்தகை வழங்கும் பகுதிகளின் எல்லைகளுக்கு அப்பால் குவாரிப்பணி மேற்கொள்வது தெரியவந்தால் அபராத நடவடிக்கை

மேற்கொள்வதுடன் குத்தகை உரிமம் ரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.

5. குழந்தை தொழிலாளர்களை வேலைக்கு அமர்த்தக்கூடாது.

மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண். 41 மற்றும் 42-ன் படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரையறுக்கப்பட்ட திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு அதிகார அமைப்பின் அனுமதியினை பெற்று சமர்ப்பிக்கவும் மனுதாரரை கேட்டுக் கொள்ளப்படுகிறது.



உதவி இயக்குநர்,
புவியியல் மற்றும் கரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:
திருமதி.S.மனோன்மணி,
க/பெ.சோமசுந்தரம்,
7/73, காரச்சேரி,
அரசம்பாளையம்,
கிணத்துக்கடவு,
கோயம்புத்தூர்.

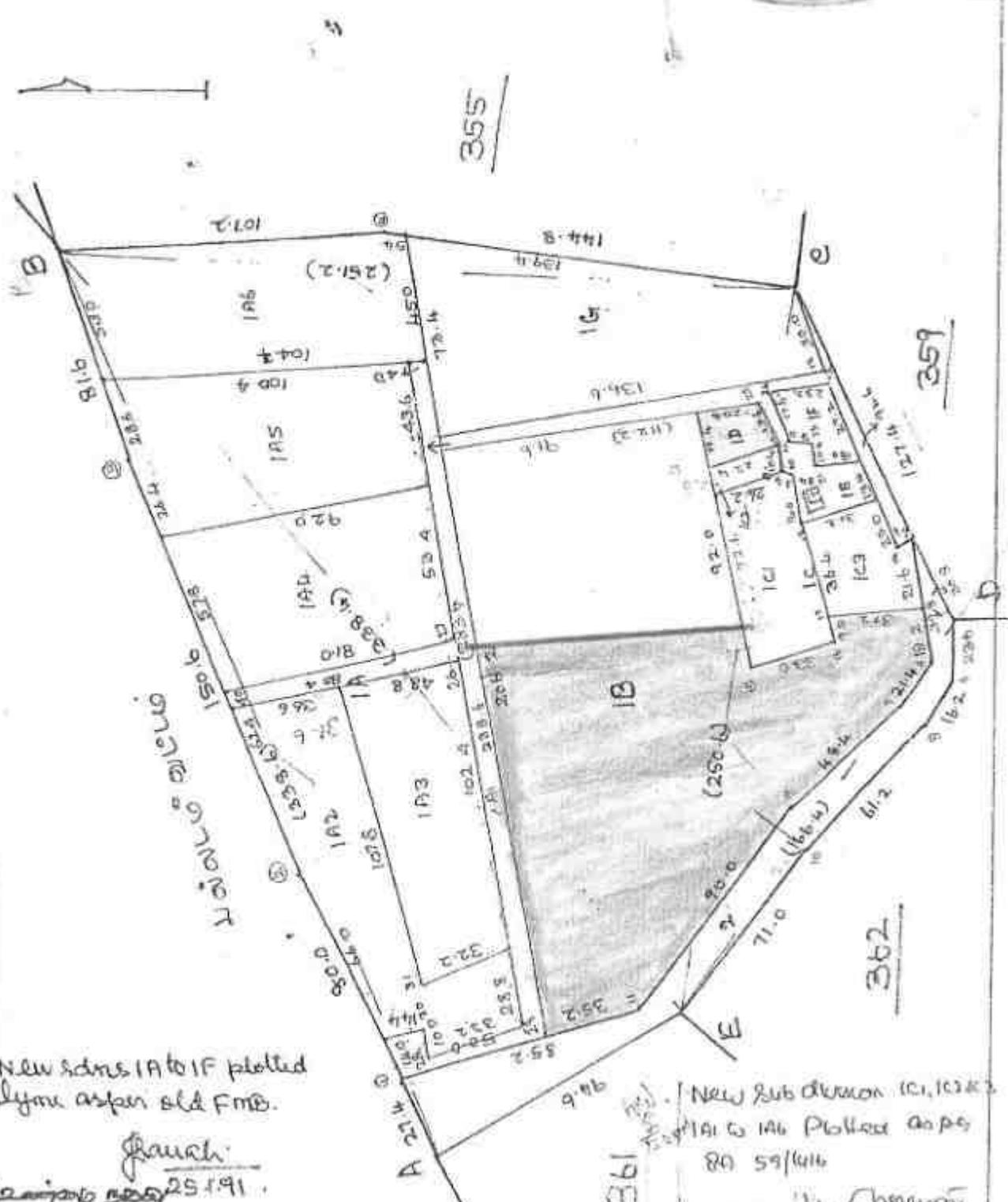
 15/2/22

வட்டம் : கிராமம் 4 தீதுள்

உ.உ. : விதானகரச்சி

முலகல 360.

பரப்பு: செக்ட்டர்



New schms 1A to 1F plotted
lyme as per old FMB.

புலகல

25.1.91

கிராம நிர்வாக அலுவலர்
6, அரம்பாளை யம் கிராமம்
கிணத்துக்கடவு வட்டம்

New Sub division (C1, C2, C3)
1A to 1G Plotted as per
80 59/1016

22.9.01



கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்
கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்
கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்



கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்
கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்
கனம் திரு. இராஜகோபால் கிருஷ்ணன்
புதுச்சேரி மாவட்டம்

LEASE APPLIED AREA



தமிழக அரசு
வருவாய்த் துறை



நில உரிமை விபரங்கள் : இ-என் 10(1) பிரிவு

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்காடடி

வருவாய் கிராமம் : ஆசாம்பாளையம்

பட்டா எண் : 953

உரிமையாளர்கள் பெயர்

1. (கே.)செலாசாமிசுண்டர்

மகம் செலாசத்தையம்

புல எண்	உட்பிரிவு	புள்ளெய்		நக்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	நீர்மை	பரப்பு	நீர்மை	பரப்பு	நீர்மை	
		மீட்டர் - ஏர்	சூ - மீட்டர்	மீட்டர் - ஏர்	சூ - மீட்டர்	மீட்டர் - ஏர்	சூ - மீட்டர்	
359	1A	0 - 18.50	0.37	--	--	--	--	R15/930-- 03-10-2014
360	1B	1 - 98.50	3.98	--	--	--	--	R15/930-- 09-10-2001
360	1D	0 - 4.00	0.08	--	--	--	--	R15/930-- 09-10-2001
360	1E	0 - 14.00	0.28	--	--	--	--	R15/930-- 09-10-2001
360	1G	0 - 70.50	1.41	--	--	--	--	R15/930-- 09-10-2001
		3 - 5.50	6.12					09-10-2001

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டில் குறிப்பிட்டுள்ள பெறப்படும். இவற்றை தகவல் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/12/001/00953 /90157 என்ற குறிப்பு எண்ணை உள்ளிட்டு சென்று உறுதி செய்துகொள்ளவும்.
2. இம் தகவல்கள் 16-08-2021 அன்று 10:15:51 AM நேரத்தில் அச்சுறுத்தப்பட்டது.
3. மாவட்ட சேவையில் 2D barcode மூலமாக மூலப் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.



பகுதி 2 - முடிவு செய்துள்ள பணிகளின் பட்டியல்

பகுதி	பெயர்	பணியின் விவரம்			பணியின் முடிவு				
		பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்
360	19	1,41	953	செயல்படுத்தும்	7	முடிவு பெறியது			
360	18	1,41	953	செயல்படுத்தும்					
360	17	1,41	953	செயல்படுத்தும்					

செயல்படுத்தும் / முடிவு பெறியது / முடிவு பெறியது / முடிவு பெறியது

பகுதி 2 - முடிவு செய்துள்ள பணிகளின் பட்டியல்

பகுதி	பெயர்	பணியின் விவரம்			பணியின் முடிவு				
		பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்	பெயர்

வி. எண். 1. அரசாங்கமன்றம்.

147



2	3	4	5	6	7	8	9	10	11	12
357-1A	ர	4	...	8-3	5	2 00	1 12.5	2 26	625	ர. பழனி மாமன் (1), ர. குமார சாமிந் கவுண்டர் (2).
-1A	ர	4	...	8-3	5	2 00	1 18.0	2 37	470	ர. பழனிமாம மான் (1), ர. செருமான் சாமிந் கவுண்டர் (2).
-1A	ர	4	...	8-3	5	2 00	0 08.0	0 16	571	குமாரசாமிந் கவுண்டர் மற்றும் தான் கோகந்தம்.
							2 46.0	4 94		
1 358-1	ர	4	...	8-3	5	2 00	1 38.5	3 81	344	ர. கார்ஷி மாமன்.
2 -2	...	...	...	...	...	...	0 35.0	...	...	...
							2 23.5	1 81		
1A 359-1A	ர	4	...	8-3	5	2 00	0 18.5	0 37	367	நா. வேலுச் சாமிந் கவுண்டர். 669. டி. சி. சிவசுப்பிரமணியன்
1B -1B	ர	4	...	8-3	5	2 00	0 22.0	0 44	257	நா. மயிலசாமிந் கவுண்டர்.
2 -2	...	...	...	...	...	...	0 17.0	...	...	...
3A -3A	ர	4	...	8-3	5	2 00	0 71.0	1 43	368	நா. வேலுச் சாமிந் கவுண்டர்.
3B -3B	ர	4	...	8-3	5	2 00	0 54.5	1 10	368	நா. வேலுச் சாமிந் கவுண்டர்.
3C -3C	ர	4	...	8-3	5	2 00	0 42.0	0 84	257	நா. மயில சாமிந் கவுண்டர்.
3D -3D	ர	4	...	8-3	5	2 00	0 69.5	1 37	368	நா. வேலுச் சாமிந் கவுண்டர்.
3E -3E	ர	4	...	8-3	5	2 00	0 21.5	0 43	257	நா. மயில சாமிந் கவுண்டர்.

கி. ராமநாதன்
6. அரசாங்கமன்றம்
கிணத்துக்கடவு வட்டம்

நில வருவாய் துறை
கிணத்துக்கடவு

வி. எண். 1. அரசாங்கமன்றம்



1	2	3	4	5	6	7	8	9	10		
359	3F	359 3F	0	4	...	8-3	5	2 00	0 12-0	0 20	471 நா. வேலூர் சாமிக்க கவுண்டர் (1), நா. மயில சாமிக்க கவுண்டர் (2).
								3 28.0	6 22		
360	1A	360-1A	0	4	...	8-3	5	2 00	2 49-5	4 99	257 நா. மயில சாமிக்க கவுண்டர்.
	1B	-1B	0	4	...	8-3	5	2 00	1 98.5	3 98	368 நா. வேலூர் சாமிக்க கவுண்டர்.
	1C	-1C	0	4	...	8-3	5	2 00	0 36.0	0 72	257 நா. மயில சாமிக்க கவுண்டர்.
	1D	-1D	0	4	...	8-3	5	2 00	0 04-0	0 08	168 நா. வேலூர் சாமிக்க கவுண்டர்.
	1E	-1E	0	4	...	8-3	5	2 00	0 14-0	0 28	471 நா. வேலூர் சாமிக்க கவுண்டர் (1), நா. மயில சாமிக்க கவுண்டர் (2).
	1F	-1F	0	4	...	8-3	5	2 00	0 03.5	0 10	368 நா. வேலூர் சாமிக்க கவுண்டர்.
	1G	-1G	0	4	...	8-3	5	2 00	0 70.8	1 41	368 நா. வேலூர் சாமிக்க கவுண்டர்.
	2	-2	0	4	...	...	...	...	0 32.0	...	...
								6 10-0	11 56		
361	1A	361-1A	0	4	...	8-3	5	2 00	0 38-0	0 76	101 க. சூப்பண்ணை கவுண்டர்.
	1B	-1A	0	4	...	8-3	5	2 00	0 46-5	0 81	167 வி. செல்வாத்தாள்.
	1C	-1A	0	4	...	8-3	5	2 00	0 64-5	1 29	263 நா. மயில சாமிக்க கவுண்டர்.

Handwritten notes:
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15/02/2022
 சி. ராமநாதன்
 கிராம நிர்வாக அலுவலர்
 6, அரசாங்கமன்றம் கிராம நிர்வாக அலுவலர்

நில வசூலாய் சீயவா.
 சிணத்துக்கடவு

	2	3	4	5	6	7	8	9	
360	360/A	3	4	...	2.3	5	2.00	0.16.0	0.32
182	"	3	4	...	2.3	5	2.00	0.45.0	0.70
183	"	3	4	...	2.3	5	2.00	0.40.0	0.80
184	"	3	4	...	2.3	5	2.00	0.48.0	0.91
185	"	3	4	...	2.3	5	2.00	0.47.0	0.94
186	"	3	4	...	2.3	5	2.00	0.53.5	1.07

257. Ma. Jayaraman

668. L. Sivasubramanian

667. L. Sivasubramanian

667. L. Sivasubramanian

669. L. Sivasubramanian

668. L. Sivasubramanian



0.49.5 4.77

0.19.5 0.37 667. L. Sivasubramanian

0.02.9 0.01 668. M. Sivasubramanian

0.14.0 0.27 668. M. Sivasubramanian

0.34.0 - 0.72

TK.88/59/1106/100000

24-8-06 திருவாய் மீது

பெயர்வைப்பு

360 101 360/K 3 4 -
 102
 103

பெயர்வைப்பு
 உ. சிவசுப்பிரமணியன்
 கிராம நிர்வாக அலுவலர்
 சி. அரண்மனை கிராம
 கிணத்துக்கடவு வட்டம்

நில வருவாய் ஆய்வாளர்
 கிணத்துக்கடவு

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469/2021



தமிழ்நாடு சட்ட அமைச்சு TAMILNADU R 500/-

AC 033968

ச. கணேசசேகரன், ஊதகை அலுவலர், தேவகி, சிவகாமி காமராசு

Lo. Senthil Kumar, சூர்தேவர்

03/02/2021



குத்தகை ஆவணம்

2021-ம் ஆண்டு பிப்ரவரி மாதம் 9-ம் தேதி தமிழ்நாடு மாநிலம், கோயமுத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், அஞ்சல் குறியீட்டு எண் 641201, அரசும்பாளையம் கிராமம் மஜரா கார்ச்சேரியில் கதவு எண் 7/73 என்ற விலாசத்தில் வசிக்கும் திரு.சோமசுந்தரம் அவர்கள் மனைவியும் கமார் 39 வயதுடையவருமான திருமதி.மனோன்மணி (ஆதார் அடையாள அட்டை எண் 4504 0942 2307)-1,

குத்தகை விடுபவர்

குத்தகை பெறுபவர்

V. Samedan

S. Manonmani





தமிழ்நாடு மாநிலம், கோயமுத்தூர் மாவட்டம், கிணத்துக்கடவன் ஊரில், அஞ்சல் குறியீட்டு எண் 641201, அரசாங்கமையம் கிராமம் மஜரா கார்ச்சேரிமில் கதவு எண் 7773 என்ற விலாசத்தில் வசிக்கும் காலஞ்சேன்ற வேலுச்சாமி என்பவரின் மகனும் கமர் 43 வயதுடையவருமான திரு.சோமசுந்தரம் (ஆதார் அடையாள அட்டை எண் 9419 5972 6775) -2 ஆகிய நாம் இருவரும் சேர்ந்து எழுதி வைத்துக்கொண்ட குத்தகை ஆவணம் என்னவென்றால்.

கீழ்க்கண்ட சொத்துக்கள் எங்களில் 2 லக்கமிட்டவருக்கு கடந்த 26.11.2012-ம் தேதியில் நெகமம் சார்பதிவாளர் அலுவலகத்தில் 1 புத்தகம் 2012-ம் ஆண்டின் 4499-ம் எண்ணாக பதிவான பாக பாத்திய விடுதலை ஆவணப்படும் மற்றும் பூர்வீக வகையிலும் பாத்தியப்பட்டு நம்மளில் 2 லக்கமிட்டவருடைய அனுபோக சுவாதீனத்தில் இருந்து வருகின்ற சொத்துக்களில் கீழ்க்காணும் சொத்துக்களை மட்டும் நம்மில் 1 லக்கமிட்டவருக்கு குத்தகைக்கு விடுவதாக பேசி ஒப்புக்கொண்டுள்ளோம்.

1. மேற்படி குத்தகை காலம் 10 வருடங்களாகும்.
2. கீழ்க்காணும் சொத்துக்களுக்கான குத்தகை கட்டணம் வருடத்திற்கு றெக்டீர் ஒன்றுக்கு ரூபாய். 2,500/- (இரண்டாயிரத்து ஐநூறு ரூபாய் மட்டும்).
3. கீழ்க்காணும் சொத்துக்களை நாளது தேதியில் இருந்து 1 லக்கமிட்டவரின் சுவாதீனத்தில் விடப்பட்டுள்ளது.
4. 1 லக்கமிட்டவர் கீழ்க்காணும் சொத்துக்களை உபயோகித்தும், மேற்படி சொத்துக்களில் மத்திய மாநில அரசு சட்ட திட்டங்களுக்கு உட்பட்டு உரிய அனுமதி பெற்று (லைஸ்சன்ஸ்) கீழ்க்காணும் பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி செய்து கொள்ள வேண்டியது.
5. கீழ்க்காணும் சொத்துக்களில் செய்யப்படும் தொழிலுக்கு சம்மந்தப்பட்ட அனைத்து மத்திய மாநில அரசு வரிகளையும் 1 லக்கமிட்டவரே செலுத்திக் கொள்ள வேண்டியது.
6. 1 லக்கமிட்டவர் செய்யக்கூடிய தொழிலுக்கு தேவையான மின் தேவைகளை 1 லக்கமிட்டவர் தன்னுடைய சொந்த செலவிலும் பெற்றுக் கொள்ளவும் அதற்கு தேவையான ஆவணங்களில் கையெழுத்து செய்து கொள்ள வேண்டியது.
7. 1 லக்கமிட்டவர் தன்னுடைய விருப்பம் போல் தொழிலுக்கு தேவையான நடவடிக்கைகளும் எடுத்துக் கொள்ள உரிமை பெற்றுக் கொள்ளும்.
8. கெடு முடிந்தவுடன் 1 லக்கமிட்டவர் 2 லக்கமிட்டவருக்கு கவர்தன்ம் செய்து கொடுத்து விட வேண்டியது.

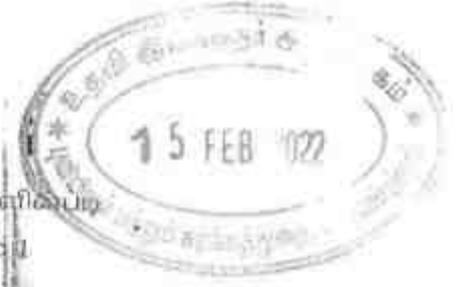
குத்தகை விடுபவர்

V-Somadasan



குத்தகை பெறுபவர்

J. Manonmani



9. கழகங்களும் சொத்துக்களில் மத்திய மாநில அரசு விதிமுறைகளின்படி சாதாரணகற்கள் மற்றும் கிராவல் குவாரிக்கு பயன்படுத்த மட்டும் 1 லக்கமிட்டவருக்கு உரிமை உண்டு. 1 லக்கமிட்டவர் தான் செய்யவேண்டிய தொழிலுக்கு தேவையான கட்டமைப்பு-வசதிகளை தன் விருப்பம் போல் செய்து கொள்ளலாம்.

10. கீழ்க்காணும் சொத்துக்களின் பேரில் குத்தகை காலத்தின் போது 1 லக்கமிட்டவர் எந்தவிதமான வில்லங்கமோ, விற்பனையோ, அடமானமோ செய்யக் கூடாது.

11. நாம் விரும்பினால் இந்த குத்தகை காலக் கெடுவிகளை நீடித்து கொள்ளலாம். அப்படி நீடித்துக் கொண்டால் 1 லக்கமிட்டவர் அதை புதிதாக பதிவு செய்து கொள்ளலாம்.

12. இந்த குத்தகைக்கு முன்பணம் ஏதும் இல்லை.

சொத்துக்களின் விவரம்

கோயமுத்தூர் பதிவு மாவட்டம் நெகமம் துணைப்பதிவு வட்டம் கிணத்துக்கடவு வட்டம் அரசாம்பாளையம் கிராமம்

பட்டா எண் 953-ன்படி

க.ச 360/1D நெ.காலை பு.ஹெக். 0.04.0 க்கு பு.ஏ. 0.10 க்கு தீ.நு 0.08 (முழுப்புலம்)

இதன் எல்லைகள்

க.ச 360/1C2 நெ.காலைக்கும் ... கிழக்கு

க.ச 360/1E நெ.காலைக்கும் ... வடக்கு

க.ச 360/1E நெ.காலைக்கும் ... மேற்கு

க.ச 360/1B நெ.காலைக்கும் ... தெற்கு

இதன் மத்தியில் மேற்படி பு.ஏ 0.10 இந்த சொத்து சகிதம்.

பின்னும் க.ச 360/1B நெ.காலை பு.ஹெக். 1.98.5 க்கு பு.ஏ. 4.90 க்கு தீ.நு 3.98

இதில் பு.ஹெக் 1.89.5 க்கு பு.ஏ 4.68 இதன் எல்லைகள்

க.ச 360/2 நெ.காலைக்கும் ... கிழக்கு

க.ச 360/2 நெ.காலைக்கும் மற்றும் க.ச 360/1C1, க.ச 360/1C2, க.ச 360/1D நெ.காலைகளுக்கும் ... வடக்கு

க.ச 360/1A1 நெ.காலைக்கும் ... தெற்கு

க.ச 360/1E, 360/1C1, 360/1C3 நெ.காலைகளுக்கும் ... மேற்கு

இதன் மத்தியில் மேற்படி பு.ஏ 4.68 இந்த சொத்து சகிதம்.

குத்தகை விடுபவர்

V-Samala



குத்தகை பெறுபவர்

S. Manonmani





4

ஆக ஒட்டு புகழைக் 1.93.5 க்கு பு.ஏ 4.78 இந்த சொத்துக்கள் சகிதம். மேற்படி சொத்துக்களுக்கு மாமுல்படி போகவர உள்ள வழிநடை வண்டி நடத்தின வழியாக நீங்கள், உங்கள் ஆட்கள், கால்நடைகள், வண்டி வாகனங்கள், கனரக வாகன வகையராக்கள் போய்வந்து கொள்ளும் நட பாததியம் சகிதம்.

குத்தகை காலம் 10 வருடங்கள்

1 வருடத்திற்கு 1 ஹெக்டேர் குத்தகை தொகை ரூ.2500/-

2500 x 1.93.5 x 10 = ரூ. 48375.00
முன் பணம் இல்லை

ஆக மொத் குத்தகை தொகை ரூ. 48375.00

குத்தகை விடுபவர்

குத்தகை பெறுபவர்

V. Soman

G. Maronmani

சாட்சிகள்

1. K. Soman

(ராமசாமி) S/o நாச்சிமுத்து, க.எண் 34,
வேரியநெகமம், பொள்ளாச்சி (TK).

2. K. Soman

(சுரேஷ்) S/o கிருஷ்ணசாமி, க.எண் 44A,
மருதாபுரம், கோவை வடக்கு.

ஆவணம் தயாரித்தவர்


E. RAMKUMAR B.A., B.L.,
Advocate M.S No: 309/14
Opp Sub Registrar Office
Negamam (Po), Pollachi (TK),
Coimbatore - 642120.
Cell No: 9842370055, 8012125225.

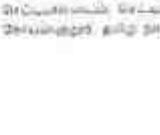



 இந்திய சர்க்கார்
 Government of India
 மனமணி சோமசுந்தரம்
 Manamani Somasundaram
 பி.என்.டி.என்.டி
 P. No. RNTARAJ DOUGER

 பி.என்.டி.என்.டி 23011981
 பாலினம் - பெண்
 Gender - Female

 4504 0942 2307

சாதாரண மனிதனின் அதிகாரம்

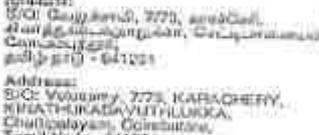
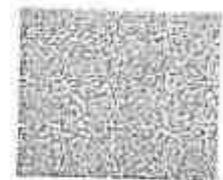

 இந்திய சர்க்கார்
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 பாலினம் - பெண்
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 15 FEB 2022
 மனமணி சோமசுந்தரம்
 Manamani Somasundaram
 பி.என்.டி.என்.டி
 P. No. RNTARAJ DOUGER


 இந்திய சர்க்கார்
 Government of India
 சுவாமிநாதன் வேலுசாமி
 Swaminathan Velusamy
 பி.என்.டி.என்.டி 03041977
 ஆண் / MALE

 9419 5972 6775
 VID : 9121 2760 4795 4183
 மனமணி சோமசுந்தரம், மனமணி சோமசுந்தரம்


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 Manamani Somasundaram
 பி.என்.டி.என்.டி
 P. No. RNTARAJ DOUGER

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 பாலினம் - பெண்
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 மனமணி சோமசுந்தரம், மனமணி சோமசுந்தரம்

சுவாமிநாதன் வேலுசாமி
 Swaminathan Velusamy
 V-Somath

மனமணி சோமசுந்தரம்
 Manamani Somasundaram
 M. Manonmani

மனமணி சோமசுந்தரம்
 மன: 469/2021
 மனமணி சோமசுந்தரம்
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 மனமணி சோமசுந்தரம்
 மனமணி சோமசுந்தரம்

THE SEAL OF THE SUBREGISTRAR
 KARACHI
 KARACHI



சாத்தாரண மனிதனின் அதிகாரம்
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செயல்பாட்டிற்கு
6587 4104 6276



ஆதாரம் - சாத்தாரண மனிதனின் அதிகாரம்



6587 4104 6276

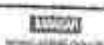


சாத்தாரண மனிதனின் அதிகாரம்
Government of India

முகவரி: 44, ஓர்ஓர்ஓர், 44
44A, ஓர்ஓர்ஓர்
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Address: 44A, OOROONDER
STREET,
MARUTHAPURAM,
Coimbatore North,
Sri Jayachandran
Coimbatore, Tamil Nadu,
641003

7632 7845 4900



சாத்தாரண மனிதனின் அதிகாரம்
Government of India



செயல்பாட்டிற்கு
Suresh Krishnasamy

செயல்பாட்டிற்கு 20011800
செயல்பாட்டிற்கு



7632 7845 4900

ஆதாரம் - சாத்தாரண மனிதனின் அதிகாரம்

K. Suresh

சாத்தாரண மனிதனின் அதிகாரம்





தமிழக அரசு

வருவாய்த துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

வருவாய் கிராமம் : அரசம்பாளையம்

பட்டா எண் : 953

உரிமையாளர்கள் பெயர்

1. (கலட்)வேறுசாபிகவுண்டர்

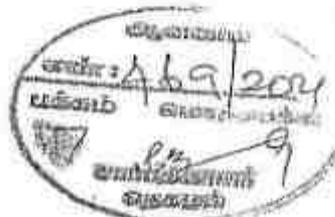
மடவள சேமகந்தரம்

புல எண்	உட்பிரிவு	புள்ளி		நுள்ளி		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
359	1A	0 - 18.50	0.37	--	--	--	--	R15/930--- -- 03-10-2014
360	1B	1 - 98.50	2.98	--	--	--	--	R15/930--- -- 09-10-2001
360	1D	0 - 4.00	0.08	--	--	--	--	R15/930--- -- 09-10-2001
360	1E	0 - 14.00	0.28	--	--	--	--	R15/930--- -- 09-10-2001
360	1G	0 - 70.50	1.41	--	--	--	--	R15/930--- -- 09-10-2001
		3 - 5.50	6.12					

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் கீழ்க் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/12/001/00953/90157 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத தகவல்கள் 09-02-2021 அன்று 11:54:03 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படப்பாணி மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



2/9/2021, 11:56 AM



2021 ஆம் ஆண்டு பிப்ரவரி மாதம் 15ம் தேதி பிப 12:44 மணியளவில் நெகமம் சார்பதிவாளர் அலுவலகத்தில் உள்நாள் உட்காணம் செய்யப்பட்டது.

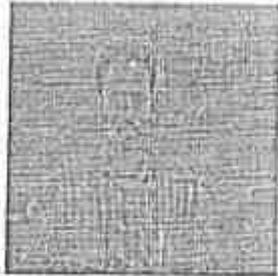
இடது பெருவிரல்



S. Manonman

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது.

மூலக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்



V. Som

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது.

மூலக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்



S. Manonman

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது.

இன்னொரு நிரூபித்தவர்கள்

1. K. S.

திரு கரேஷ் த/பெ கிருஷ்ணசாமி 44 மருதாபுரம், கோயம்புத்தூர் வ.க.க. கோயம்புத்தூர், தமிழ்நாடு, இந்தியா, 642120

2. K. V. Manon

திரு ராமசாமி த/பெ தாச்சிமுத்து 34 பெரியநெகமம், பொள்ளாச்சி, கோயம்புத்தூர், தமிழ்நாடு, இந்தியா, 642120

2021 ஆம் ஆண்டு பிப்ரவரி மாதம் 15ம் நாள்

பாக்கியலட்சுமி ஜி
சார்பதிவாளர்
நெகமம்



R/நெகமம்/புத்தகம்-1/469/2021

R/நெகமம்/புத்தகம்-1/469/2021 கண்ணாடி பதிவு செய்யப்பட்டது.

நாள்: 15 2022

ஆகாசம்



2 / 2



மதுரை மாவட்டம்
 கோட்டாட்சியகம்
 மதுரை கோட்டாட்சியகம்
 Musonhalli Somasundaram
 4540 0942 2307
 PAPER NATARAJ GOUDAR
 மதுரை-008 2301/1941
 மதுரை - தமிழ்
 4504 0942 2307

சாதாரண மனிதனின் அதிகாரம்

மதுரை மாவட்டம்
 கோட்டாட்சியகம்
 மதுரை கோட்டாட்சியகம்
 Musonhalli Somasundaram
 4540 0942 2307
 PAPER NATARAJ GOUDAR
 மதுரை-008 2301/1941
 மதுரை - தமிழ்

4504 0942 2307





அறிவியல் புலம்
FACULTY OF SCIENCE

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2010 ஆம் ஆண்டு ஏப்ரல் மாதம் நடந்த பயன்பாட்டுப்புவியமைப்பியல் தேர்வில் தேர்வில் அரசு கலைக் கல்லூரி, சேலம் - 636 007 (தன்னாட்சி) பயின்ற P விஸ்வநாதன் என்பவர் முதல் வகுப்பு A++ தரத்தில் தேர்ச்சி பெற்றார் என்று தக்க தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர் என்னும் பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

The Syndicate of the Periyar University hereby makes known that **VISWANATHAN P** *has been admitted to the DEGREE OF MASTER OF SCIENCE in APPLIED GEOLOGY he/she having been certified by duly appointed Examiners to be qualified to receive the same and was placed in the FIRST CLASS WITH A++ GRADE at the Examination held in APR-2010 through GOVERNMENT ARTS COLLEGE, SALEM - 636 007 (AUTONOMOUS).*



Given under the seal of this university



நாள்
Dated 28-02-2011
சேலம் 636011, தமிழ்நாடு, இந்தியா.
Salem 636011, Tamil Nadu, India.

பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

TIN. No. : 3312 2703755
C.S.T. No. : 880783 / 29.11.2005
Area Code : 142



Ph : Mines : 0427 - 2403645
Fact : 0427 - 2400046



SUDHARSHAAN MINING CORPORATION

Mfrs : Dead Burnt Magnesite, Lightly Calcined Magnesite, Dunite Chips & Powder.
S.F. No. 77, Kuduvampatty Road, Vinayagampatti, SALEM - 636 008.

Date : 28.12.2015.....

EXPERIENCE CERTIFICATE

This is to certify that **Shri.P.Viswanathan, S/o. P.Paramasivam, Geologist,** has worked in our Magnesite Mines from **13.09.2010 to 25.11.2015** as our company Geologist. During his service he used to maintain all records and returns submitted to Government Departments.

His nature of work in the mines was to show the plan of working and demarcate Magnesite reserve areas. He was looking after production of Magnesite and was maintaining quality of the Mineral as per the specifications given by the buyers.

During his tenor of his service he was very sincere and prompt in his duties.

I wish him the best of luck in all his future endeavours.

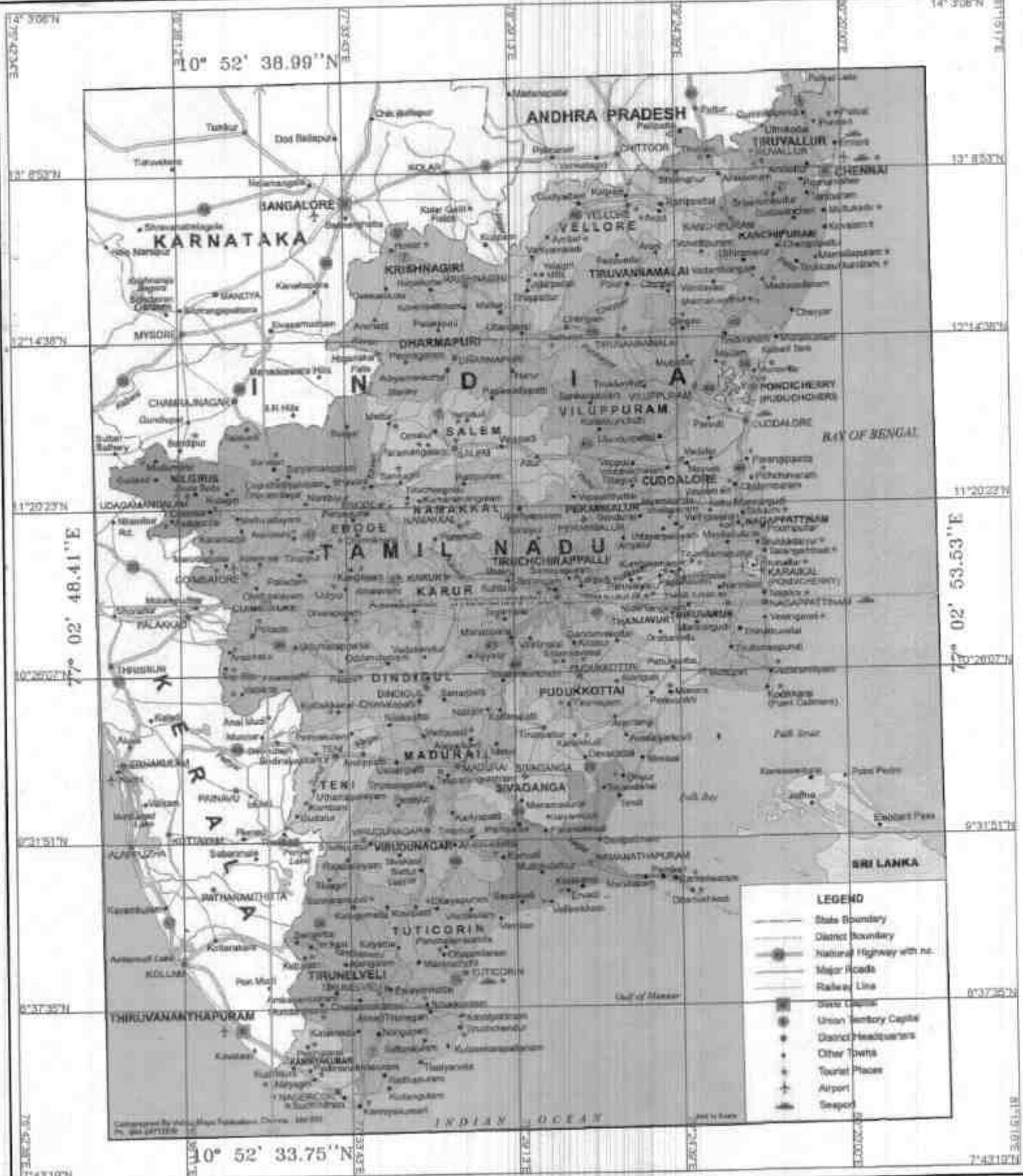
For M/s.SUDHARSHAAN MINING CORPORATION,

SUDHARSHAAN MINING CORPORATION
SF-77, KUDUVAMPATTI ROAD,
SALEM - 636 008. Tamilnadu.


G.PASUPATHY,
Proprietor

28 Dec 2015

Resi : "Garuda" 14/315, Kallyapillai Garden IInd Cross, Fairlands, Salem - 636 004. Tamilnadu.



INDEX

Q.L.APPLIED AREA : ●
 TOPO SHEET NO. : 58 F/01
 LATITUDE : 10° 52' 33.75"N to 10° 52' 38.99"N
 LONGITUDE : 77° 02' 48.41"E to 77° 02' 53.53"E

APPLICANT:

Tmt.MANOMANI
 W/o.SOMASUNDRAM
 No.7/73,KARACHERY
 KINATHUKADAVU,CHETTIPALAYAM
 COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO : 360/1B2(P).
 EXTENT : 1.30.0 Ha.
 VILLAGE : ARASAMPALAYAM.
 TALUK : KINATHUKADAVU.
 DISTRICT : COIMBATORE.
 STATE : TAMIL NADU.

PLATE NO - I

DATE OF SURVEY : 04.02.2022

LOCATION PLAN

SCALE. 1:24,00,000

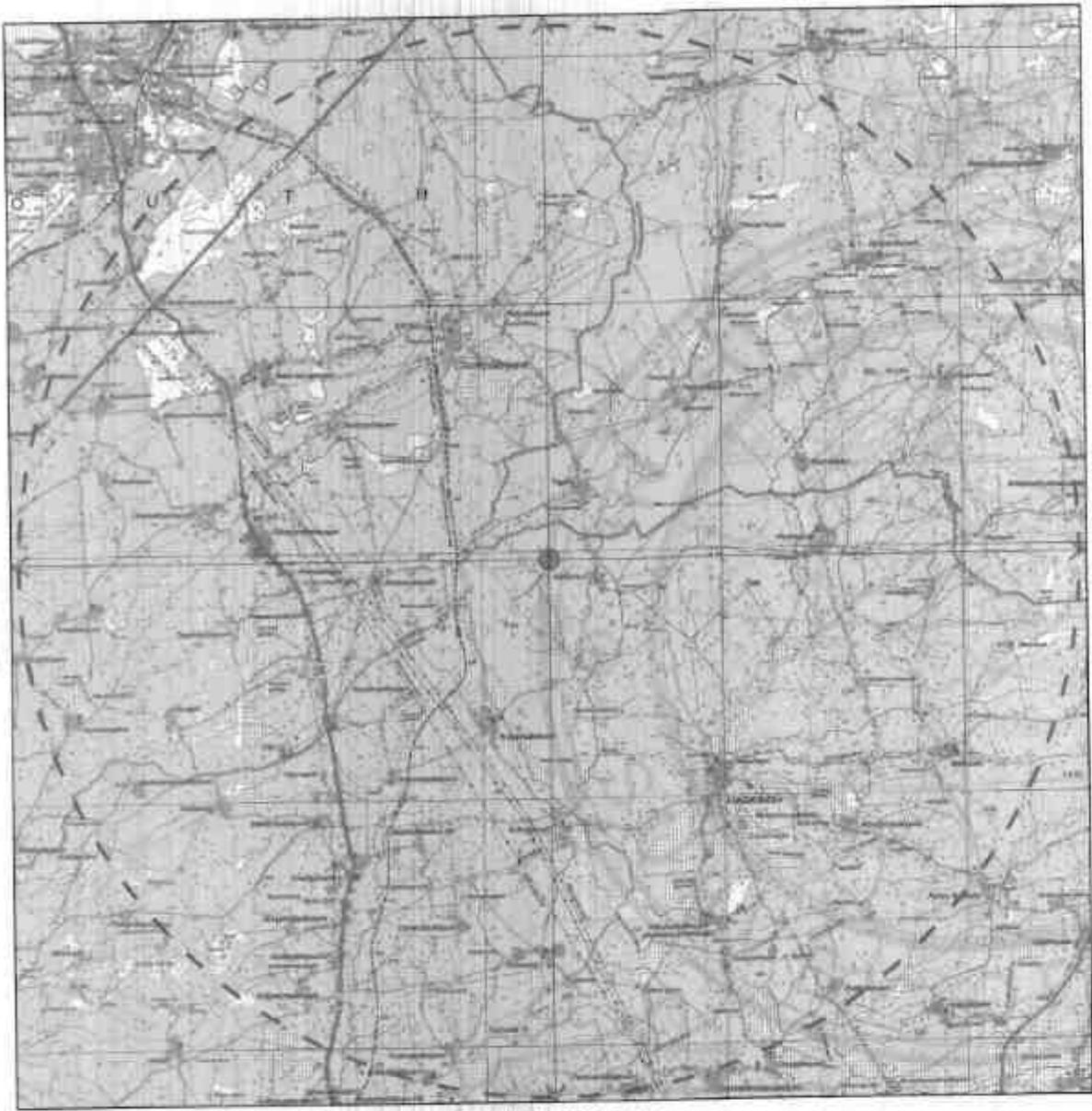
PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
 PLAN IS TRUE AND CORRECT TO THE BEST OF MY
 KNOWLEDGE BASED UPON THE LEASE MAP
 AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
 P.VISWANATHAN,M.Sc.,
 QUALIFIED PERSON

CONVENTIONAL SYMBOLS

Water bodies with or without islands with dimensions			
Roads, marked according to direction			
Roads, double-lane, according to direction			
Unimproved, ordinary, roads with or without footpaths			
Boundaries with or without pillars			
Boundaries with or without pillars, with or without footpaths			
Boundaries with or without pillars, with or without footpaths, with or without water			
Boundaries with or without pillars, with or without footpaths, with or without water, with or without trees			
Boundaries with or without pillars, with or without footpaths, with or without water, with or without trees, with or without buildings			
Boundaries with or without pillars, with or without footpaths, with or without water, with or without trees, with or without buildings, with or without other structures			
Boundaries with or without pillars, with or without footpaths, with or without water, with or without trees, with or without buildings, with or without other structures, with or without other features			
Boundaries with or without pillars, with or without footpaths, with or without water, with or without trees, with or without buildings, with or without other structures, with or without other features, with or without other symbols			



10° 58' 04.37"N

76° 57' 19.10"E

77° 08' 22.71"E

10° 47' 08.37"N

TOPO SHEET NO.: 58 F/01
 LATITUDE : 10° 52' 33.75"N to 10° 52' 38.99"N
 LONGITUDE : 77° 02' 48.41"E to 77° 02' 53.53"E
 10km RADIUS :

Q.L. APPLIED AREA :

APPLICANT:

Tmt.MANOMANI,
 W/o.SOMASUNDRAM
 No.773,KARACHERY
 KINATHUKADAVU,CHETIPALAYAM
 COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO : 360/182(P).
 EXTENT : 1.30.0 Hq.
 VILLAGE : ARASAMPALAYAM.
 TALUK : KINATHUKADAVU,
 DISTRICT : COIMBATORE.
 STATE : TAMIL NADU.

PLATE NO - I-A

DATE OF SURVEY : 04.02.2022

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10km RADIUS

SCALE. 1:1,00,000

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THE PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
 P. VISWANATHAN, M.Sc.,
 QUALIFIED PERSON

LANDUSE PATTERN	
DESCRIPTION	PERCENTAGE
ROADS, RAILWAY	(10%)
HABITATION	(10%)
TREES	(15%)
AGRICULTURAL LAND	(45%)
PIT, CRUSHER	(20%)

OCTOBER TO DECEMBER



PLATE NO: I-B

Date of Survey : 04.02.2022

1Km Radius

500m Radius

Q.L. Applied Area

15 FEB 2022

TOPO SHEET NO : 56 F/01

LATITUDE : 10° 53' 25.91" N TO 10° 52' 35.99" N

LONGITUDE : 77° 02' 48.41" E TO 77° 02' 53.53" E

APPLICANT:

Tmt.MANOMANI,
W/o.SOMASUNDRAM
No.7/73,KARACHERY
KINATHUKADAVU,CHETTIPALAYAM
COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE

APPLIED AREA:

S.F.NO : 340/182(P),
EXTENT : 1.30.0 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

APPROACH ROAD	
VILLAGE ROAD	
HABITATION	
TREES	
AGRICULTURAL LAND	
PIT	
WIND DIRECTION	
CRUSHER PLANT	
RAILWAY TRACK	
POWER LINE	
ODAI	

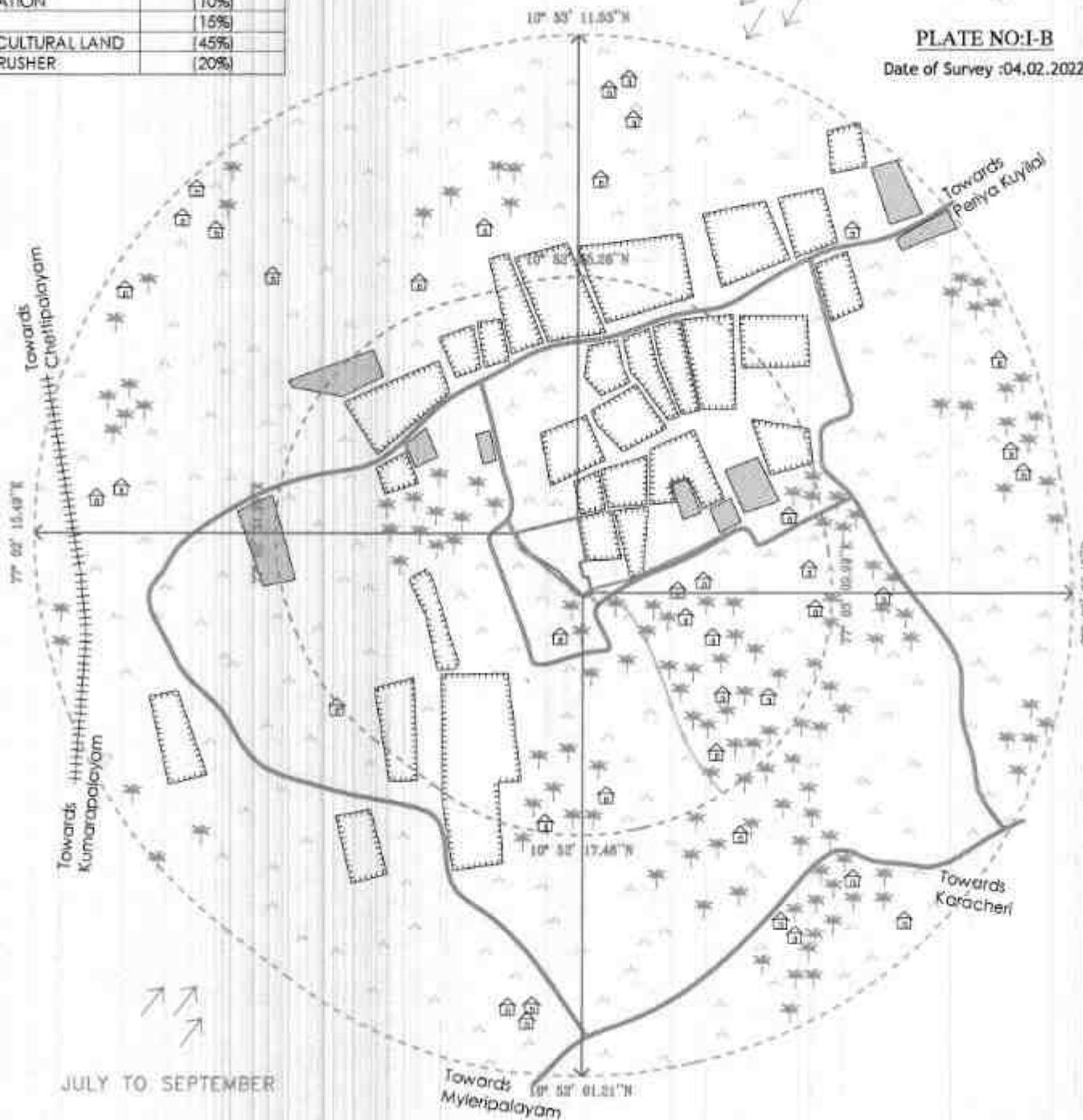
ENVIRONMENTAL AND LANDUSE PLAN FOR 1Km RADIUS

SCALE- 1:10,000

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathar
P.VISWANATHAR, M.Sc.,
QUALIFIED PERSON



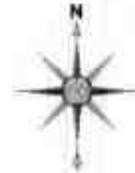


PLATE NO: I-C

DATE OF SURVEY: 04.02.2022

APPLICANT:

Tmt. MANOMANI,
W/o. SOMASUNDRAM
No. 7/73, KARACHERY
KINATHUKADAVU, CHETTIPALAYAM
COIMBATORE DISTRICT-641 201.

**LOCATION OF QUARRY LEASE
APPLIED AREA:**

S.F.NO : 360/1B2(P).
EXTENT : 1.30.0 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

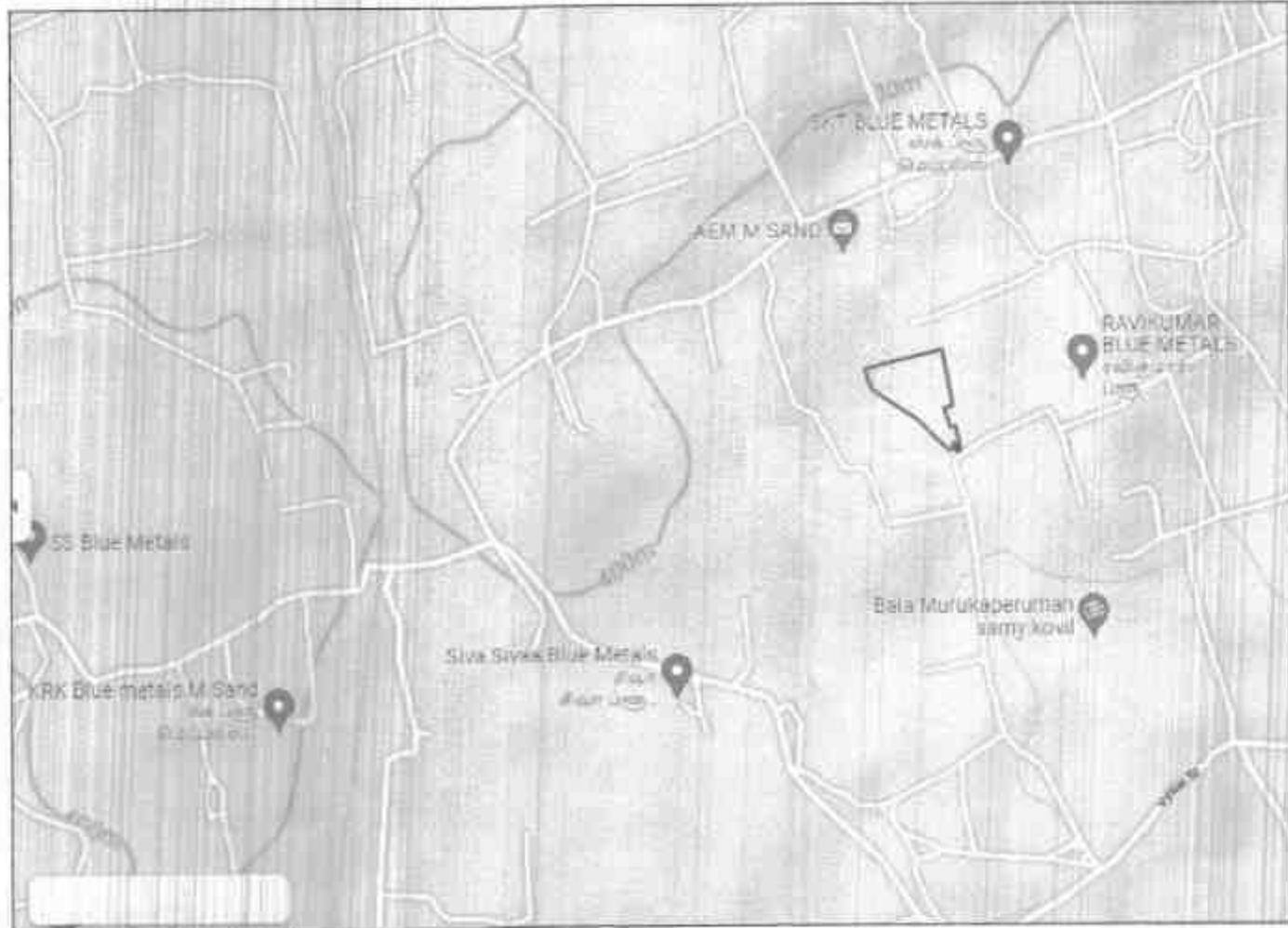
Q.L. APPLIED AREA	
RAILWAY TRACK	
VILLAGE ROAD	
APPROACH ROAD	

ROUTE PLAN
Not To Scale

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON



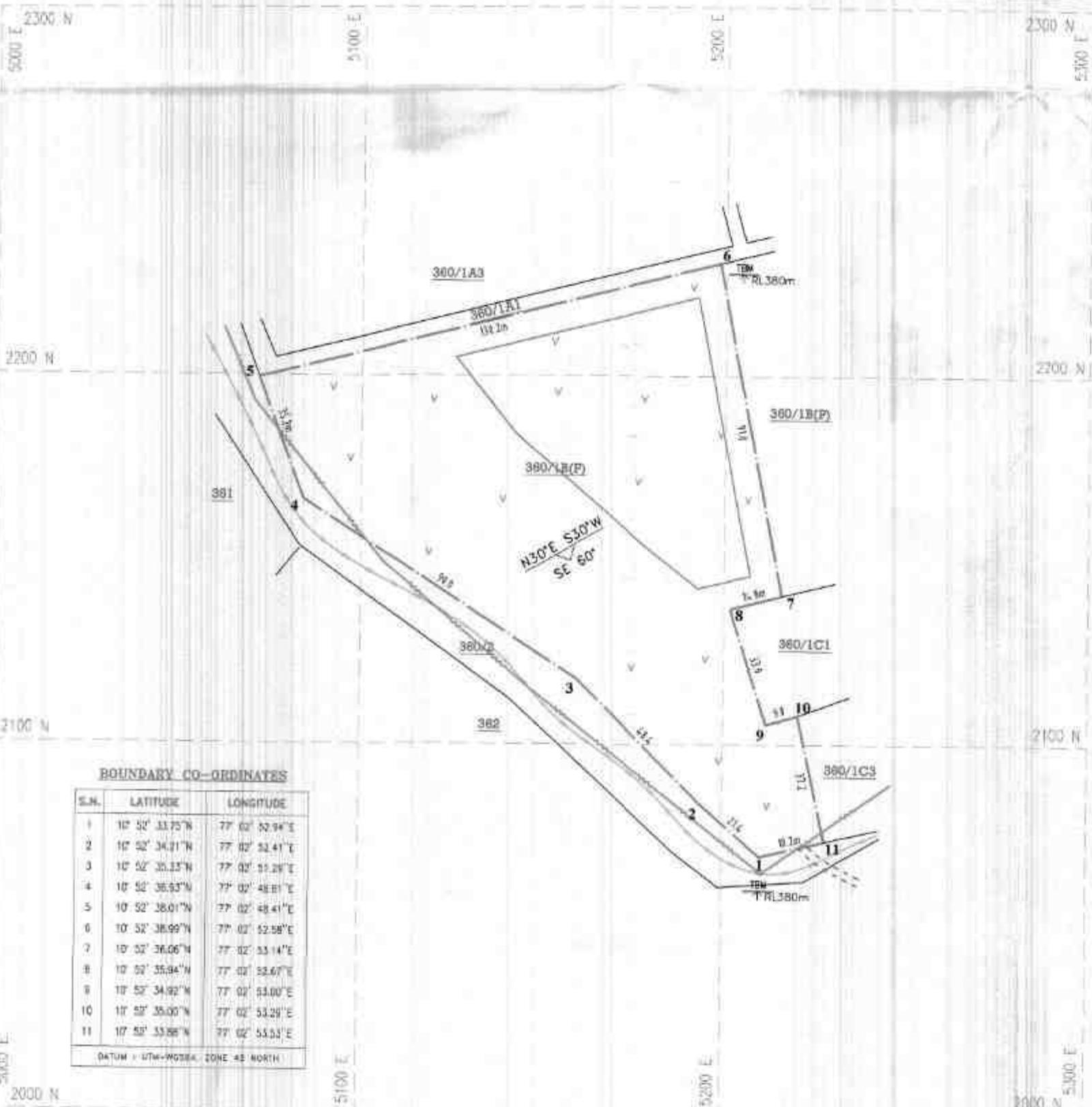


PLATE NO - II
Date of Survey: 04.02.2022

APPLICANT:
Tmt. MANOMANI,
W/o. SOMASUNDRAM
No. 7/73, KARACHERY
KINATHUKADAVU, CHETTI PALAYAM
COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F. NO : 360/1B2(P).
EXTENT : 1.300 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

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Q.L. APPLIED BOUNDARY	
7.5m & 80m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
GRAVEL	
APPROACH ROAD	
STRIKE AND DIP	
LT LINE	
ODAI	

BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	10° 52' 33.75" N	77° 02' 52.94" E
2	10° 52' 34.21" N	77° 02' 53.41" E
3	10° 52' 35.13" N	77° 02' 53.29" E
4	10° 52' 36.93" N	77° 02' 48.81" E
5	10° 52' 38.01" N	77° 02' 48.41" E
6	10° 52' 38.99" N	77° 02' 52.58" E
7	10° 52' 36.06" N	77° 02' 53.14" E
8	10° 52' 35.94" N	77° 02' 52.67" E
9	10° 52' 34.92" N	77° 02' 53.00" E
10	10° 52' 35.00" N	77° 02' 53.29" E
11	10° 52' 33.98" N	77° 02' 53.53" E

DATUM : UTM-WGS84, ZONE 48 NORTH

QUARRY LEASE & SURFACE PLAN

SCALE 1 : 1000

PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.
P. V. VISWANATHAN
P. VISWANATHAN, M.S.S.,
QUALIFIED PERSON



PLATE NO - IV
Date of Survey :04.02.2022

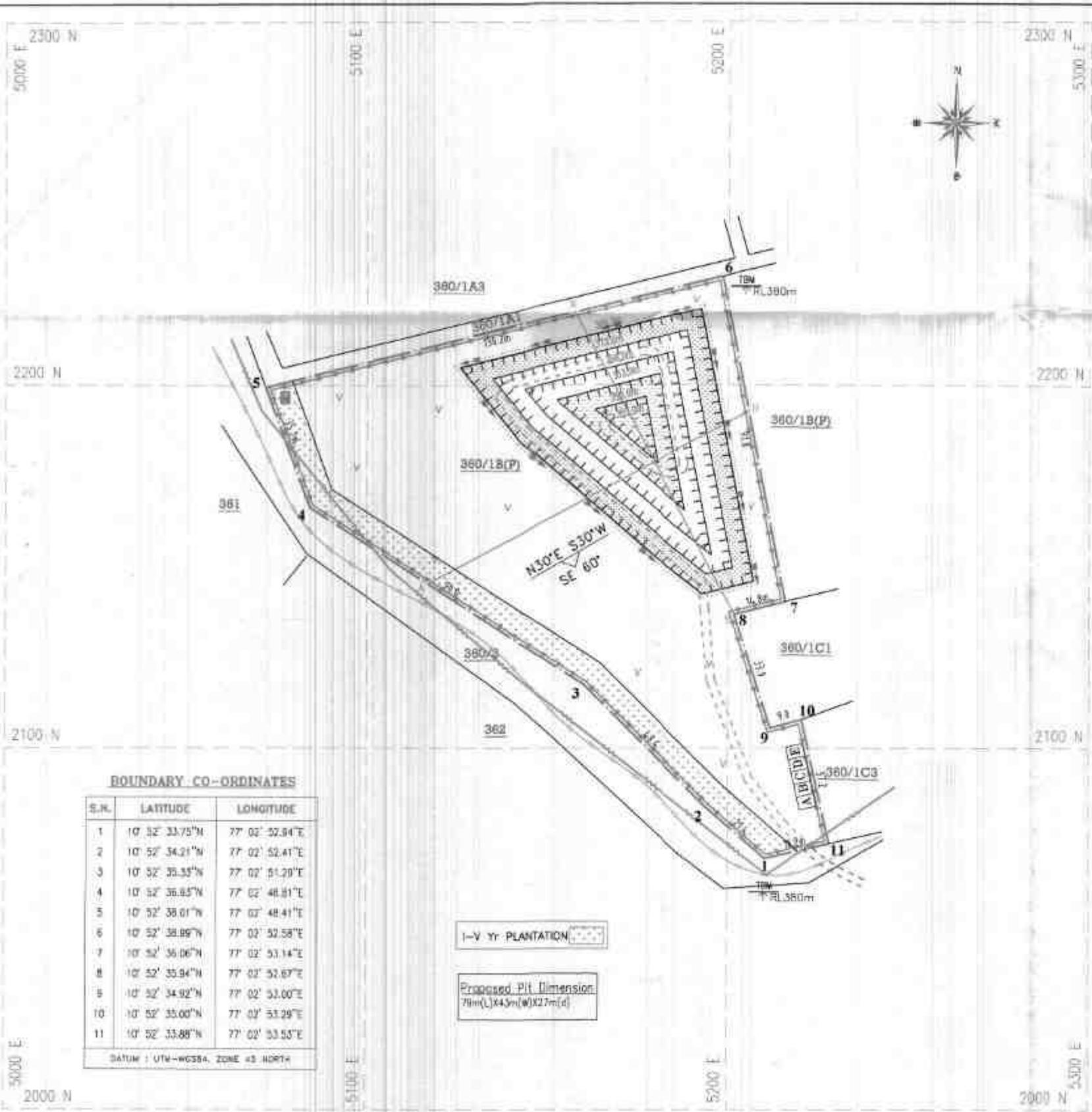
APPLICANT:
Tmt.MANOMANI,
W/o.SOMASUNDRAM
No.773,KARACHERY
KINATHUKADAVU,CHETTIPALAYAM
COIMBATORE DISTRICT-641 201.

**LOCATION OF QUARRY LEASE
APPLIED AREA:**

S.F.NO : 360/1B2(P).
EXTENT : 1.30.0 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

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- Q.L. APPLIED BOUNDARY
- 7.5m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- STRIKE AND DIP
- LT LINE
- ODA
- QUARRY PIT
- QUARRY ROAD
- REHABILITATED LANDFORM
- EXISTING LANDFORM
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- TREES
- SOIL LAYER
- RAIN WATER STORAGE
- FENCING
- PROPOSED GARLAND DRAIN



BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	10° 52' 33.75"N	77° 02' 52.94"E
2	10° 52' 34.21"N	77° 02' 52.41"E
3	10° 52' 35.33"N	77° 02' 51.20"E
4	10° 52' 36.85"N	77° 02' 48.81"E
5	10° 52' 38.01"N	77° 02' 48.41"E
6	10° 52' 38.99"N	77° 02' 52.58"E
7	10° 52' 36.06"N	77° 02' 53.14"E
8	10° 52' 35.94"N	77° 02' 52.67"E
9	10° 52' 34.92"N	77° 02' 53.00"E
10	10° 52' 35.00"N	77° 02' 53.29"E
11	10° 52' 33.88"N	77° 02' 53.55"E

DATUM : UTM-WGS84, ZONE 43 NORTH

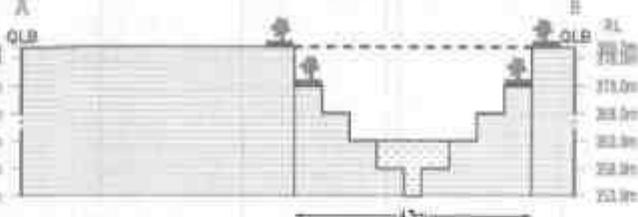
1-5 Yr PLANTATION

Proposed Pit Dimension
78m(L)X43m(W)X27m(D)

SECTION ALONG X-Y



SECTION ALONG A-B



- SOIL SERVICES**
- A - OFFICE
 - B - STORE ROOM
 - C - FIRST AID ROOM
 - D - REST SHELTER
 - E - TOILET
 - M - MAGAZINE

**PROGRESSIVE QUARRY
CLOSURE PLAN & SECTIONS**
SCALE 1 : 1000

PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

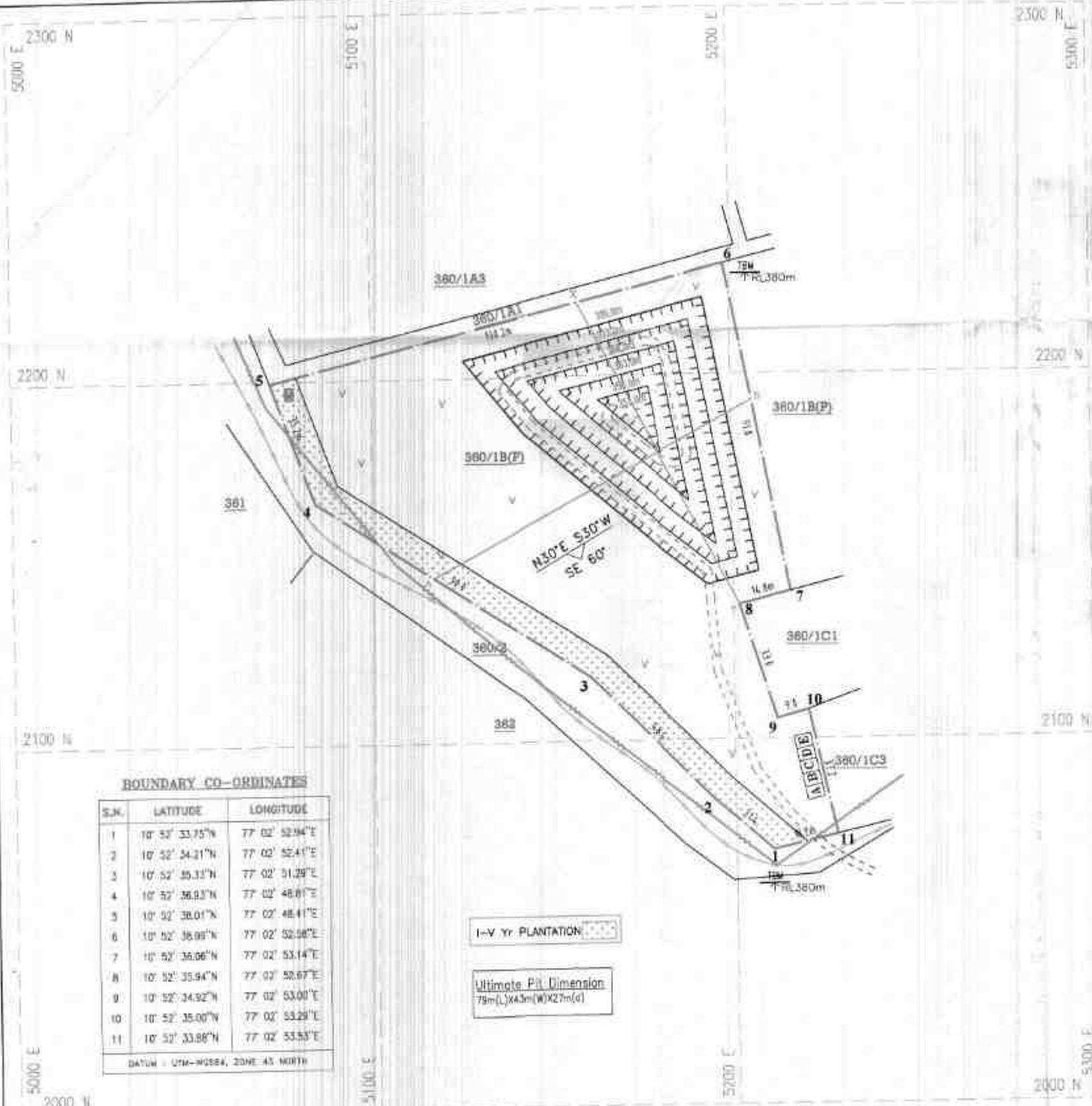


PLATE NO - V
Date of Survey : 04.02.2022

APPLICANT:
M/s MANOMANI,
W/o SOMASUNDRAM
No.7/73, KARACHERY
KINATHUKADAVU, CHETIPALAYAM
COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F. NO : 360/1B2(P).
EXTENT : 1.30.0 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

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Q.L. APPLIED BOUNDARY	
7.5m & 50m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
GRAVEL	
APPROACH ROAD	
STRIKE AND DIP	
LT LINE	
ODAI	
ROUGH STONE	
QUARRY PIT	
QUARRY ROAD	

BOUNDARY CO-ORDINATES

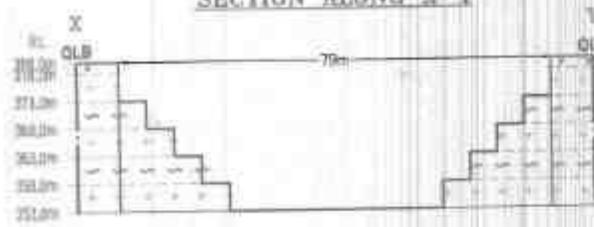
S.N.	LATITUDE	LONGITUDE
1	10° 52' 33.75"N	77° 02' 52.94"E
2	10° 52' 34.21"N	77° 02' 52.41"E
3	10° 52' 35.31"N	77° 02' 51.29"E
4	10° 52' 36.03"N	77° 02' 48.01"E
5	10° 52' 38.01"N	77° 02' 48.41"E
6	10° 52' 38.98"N	77° 02' 52.98"E
7	10° 52' 38.96"N	77° 02' 53.14"E
8	10° 52' 35.94"N	77° 02' 52.67"E
9	10° 52' 34.92"N	77° 02' 53.00"E
10	10° 52' 35.00"N	77° 02' 53.29"E
11	10° 52' 33.88"N	77° 02' 53.53"E

DATUM : UTM-WGS84, ZONE 45 NORTH

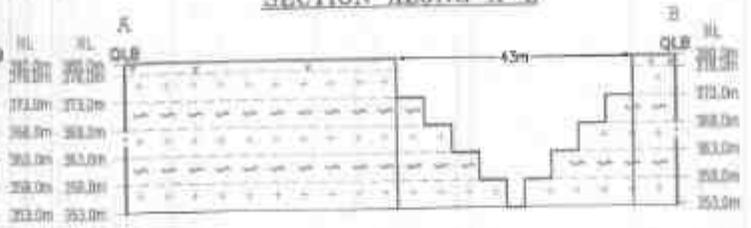
I-V Yr PLANTATION

Ultimate Pit Dimension
79m(L)X43m(W)X27m(d)

SECTION ALONG X-Y



SECTION ALONG A-B



SITE SERVICES

A	OFFICE
B	STORE ROOM
C	FIRST AID ROOM
D	REST SHELTER
E	TOILET
M	MAGAZINE

CONCEPTUAL PLAN & SECTIONS
SCALE 1 : 1000

PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON

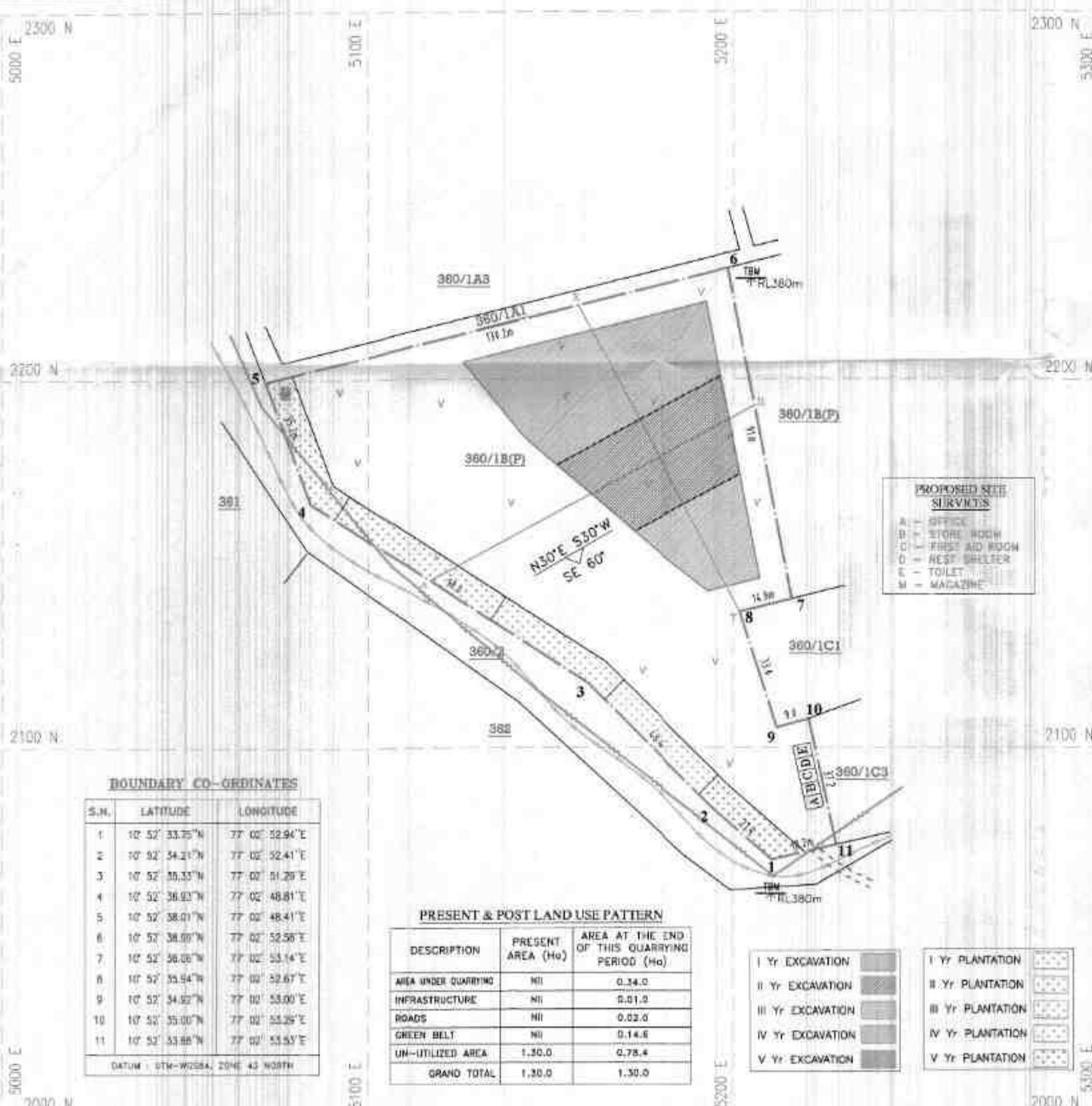


PLATE NO - IV
Date of Survey : 04.02.2022

APPLICANT:
Tmt.MANOMANI,
W/o.SOMASUNDRAM,
No.7/73,KARACHERY,
KINATHUKADAVU,CHETTIPALAYAM,
COIMBATORE DISTRICT-641 201.

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO : 360/1B2(P),
EXTENT : 1.30.0 Ha.
VILLAGE : ARASAMPALAYAM,
TALUK : KINATHUKADAVU,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

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G.L. APPLIED BOUNDARY	
7.5m & 50m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
GRAVEL	
APPROACH ROAD	
STRIKE AND DIP	
LT LINE	
ODA	
ROUGH STONE	

BOUNDARY CO-ORDINATES

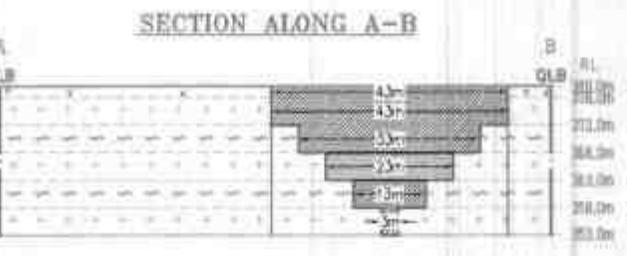
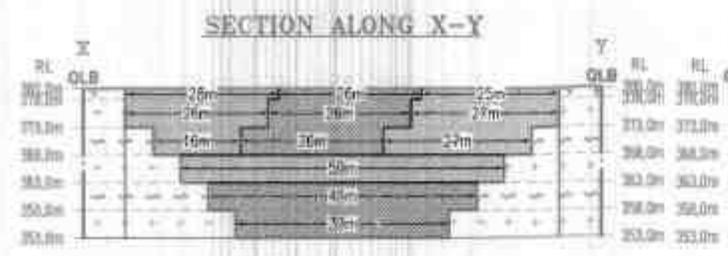
S.N.	LATITUDE	LONGITUDE
1	10° 52' 33.75" N	77° 02' 32.94" E
2	10° 52' 34.21" N	77° 02' 32.41" E
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4	10° 52' 36.93" N	77° 02' 48.81" E
5	10° 52' 38.01" N	77° 02' 48.41" E
6	10° 52' 38.99" N	77° 02' 52.58" E
7	10° 52' 36.06" N	77° 02' 53.14" E
8	10° 52' 35.94" N	77° 02' 52.67" E
9	10° 52' 34.92" N	77° 02' 53.00" E
10	10° 52' 35.00" N	77° 02' 53.26" E
11	10° 52' 33.88" N	77° 02' 53.53" E

DATUM : UTM-WGS84, ZONE 43 NORTH

PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	Nil	0.24.0
INFRASTRUCTURE	Nil	0.01.0
ROADS	Nil	0.03.0
GREEN BELT	Nil	0.14.6
UN-UTILIZED AREA	1.30.0	0.78.4
GRAND TOTAL	1.30.0	1.30.0

I Yr EXCAVATION		I Yr PLANTATION	
II Yr EXCAVATION		II Yr PLANTATION	
III Yr EXCAVATION		III Yr PLANTATION	
IV Yr EXCAVATION		IV Yr PLANTATION	
V Yr EXCAVATION		V Yr PLANTATION	



TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
SCALE 1 : 1000

PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.
P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON

SENTHIL EXPLOSIVES

20, PANCHAYAT OFFICE STREET, SULUR, COIMBATORE - 641 402

Date 11/02/2022

To

S.Manonmani,
W/O.Somasundharam,
7/73,Karacheri,
Arasampalayam Village,
Kinathukadavu,
Coimbatore.

Sir,

Sub: Regarding blasting work using Explosives in your proposed quarry.

We are having explosives license in from 22 holding No.E42667 situate in survey number SF.NO: 126/2(V) NO:80, Sulur village, Sulur Taluk, Coimbatore District, our office functioning at address.

Senthil Explosives, 20, Panchayat office street, Sulur, Coimbatore-641402.

We are enacting 4 explosives vans for transporting detonators and class: 2 separately for our magazine to our work site and well experienced and licensed blasters and mate for safe blasting work since 5 years without untoward incident.

We are willing to undertake blasting work on contract basic at your proposed quarry at SF.No's:360/1B(P), Arasampalayam village, Kinathukadavu Taluk , Coimbatore District.

FOR SENTHIL EXPLOSIVES

Partner Signature.

Enclosure: 1. Licence Copies

For SENTHIL EXPLOSIVES


Partner

अनुमति प्रारूप एच. ई-3 LICENCE FORM (E-3)

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 1(क) से (घ) देखिए।
(See article No.1 (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(1) उपरोक्त के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैग्नेटिन में वर्ग 6 के विस्फोटक रखने के लिए
(Licence is granted for the use of explosives of class 1, 2, 3, 4, 5 or 7 in a magazine

अनुमति नं. (Licence No.): E/HQ/TN-22377(E-42667)

वार्षिक फीस (Annual Fee Rs): 9000/-



1. Licence is hereby granted to:

M/s Seshil Explosives (अधिभोगी / Occupier): S.S. SAKTHIVELLI, - 20, PANCHAYAT OFFICE STREET, SUI UR, COIMBATOR
Dist. Town Village - SUI UR, District-COIMBATORE, State-Tamil Nadu, Pincode - 641402

का अनुमति अनुमति की जाती है।

2. अनुमतिधारी की प्रकृति (Status of licensee: Partnership Firm)

3. अनुमति निम्नलिखित प्रयोजनों के लिए विधिवत है।

purpose for use of Storey Explosives, Safety Fuse, Detonating

Licence is valid only for the following purpose:

Demolition. - के उपयोग के लिए।

4. अनुमति विस्फोटकों के निम्नलिखित प्रकार, प्रकार और मात्रा के लिए विधिवत है।

Licence is valid for the following kinds and quantity of explosives - (IB) (a)

क्र. सं.	नाम और विवरण	वर्ग और प्रमाण	उप-प्रमाण	मात्रा किसी एक समय में
No. No.	Name and Description	Class & Division	Sub-division	Quantity at any one time
1	Storey Explosives	2/A	0	9999 Kg
2	Safety Fuse	F-1	0	20000 Mts
3	Detonating Fuse	F-2	0	10000 Mts
4	Demolition	F-3	0	40000 Nos

(अ) किसी एक कठोरेर मात्रा में सीमित अन्य होते विस्फोटक की मात्रा (अनुच्छेद 3(क) और (घ) के अंतर्गत अनुमति के लिए।

(b) Quantity of explosives to be purchased in a colenise limit applicable for licence under article 3(b) and (c)

20 times as above.

5. निम्नलिखित शर्तों (शर्तों) से अनुमति परिलक्षित की गयी है।

The licensed premises shall conform to the following drawings:

शर्तों का नंबर - Drawing No. (E/HQ/TN-22377(E-42667)

दिनांक (Date): 21/01/2022

6. अनुमति परिलक्षित पते पर स्थित है। The licensed premises are situated at following address:

Harves No. (District) No. 20, SUI UR / Town Village, SUI UR

पुलिस थाना (Police Station): COIMBATORE

जिला (District): COIMBATORE

दूरभाष (Phone)

राज्य (State):

Tamil Nadu

पिनकोड (Pincode)

641402

7. अनुमति परिलक्षित में निम्नलिखित सुविधाएं संलग्न हैं।

The licensed premises consist of following facilities:

a main magazine room, a lobby and a detonator storage room.

8. अनुमति प्राप्त - समय पर परामर्शित विस्फोटक अधिनियम, 1984 और उसके अंतर्गत विस्फोटक नियम, 2008 के अंतर्गत शर्तों और अतिरिक्त शर्तों और निम्नलिखित शर्तों के अधीन रखे हुए अनुमति की जाती है।

The licence is granted subject to the provisions of Explosives Act 1984 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions additional conditions and the following Annexures

1. उपरोक्त काम से 5 मीटर दूरी पर रखे जाने वाले, सफाई, सुरक्षा और अन्य विवरण शामिल करते हुए।

Drawings showing all arrangements and other details as stated in serial No. 8 above.

2. अनुमति प्रकृति (धारा) के अंतर्गत अनुमति की शर्तों और अतिरिक्त शर्तों।

Conditions and Additional Conditions of the licence given by the issuing authority.

3. दूरी प्रारूप (E-2) Distance Form E2-2

9. यह अनुमति तारीख 31 मार्च 1993 तक विधिवत पर होगी। This licence shall remain valid till 31st day of March 1993.

यह अनुमति अधिनियम या उसके अंतर्गत विधिवत नियमों या अनुसूची 4 के भाग 1 के प्रविष्टि में 2008 के अंतर्गत अनुमति पर अनुमति की शर्तों का अधिनियम होने पर यह अनुमति परिलक्षित होगी। इसके अंतर्गत अनुमति में दृष्टिगत विवरण के अनुसार नहीं पर अनुमति पर परिलक्षित की जा सकती है, जहां पर अनुमति है।

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under 5 & 8 VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description therein in the plan sheet Annexure attached hereto.

तारीख: The Date: 21/01/2022

मुख्य विस्फोटक नियंत्रक (Chief Controller of Explosives)

Amendments:

- Amendment of Quantity of Explosives Monthly Purchase Limit dated: 27/08/2013
- Amendment of Quantity of Explosives Monthly Purchase Limit dated: 29/08/2019
- Amendment of Quantity of Explosives Monthly Purchase Limit dated: 31/01/2019
- Amendment of Quantity of Explosives Monthly Purchase Limit dated: 20/01/2022

नवीनीकरण के पत्राचार के लिए स्थान
Space for Endorsement of Renewal

नवीनीकरण की तारीख
Date of Renewal

08/02/2019

समाप्ति की तारीख
Date of Expiry

31/01/2024

अनुमति प्रकृतिधारी के हस्ताक्षर और स्टांप
Signature of licensing authority and stamp

SE-

J. CHIEF Controller of Explosives, South Circle, Chennai

कार्तवीर्य श्रेष्ठवर्ती: विस्फोटकों को गलत रूप से जलाने या उनका दुरुल्लेख विधि के अंतर्गत संभर दंडित अपराध होगा।
Statutory Warning: Mishandling and misuse of explosives shall constitute criminal offence under the law.

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

Digitally signed by Dr T. S. Thiruvengam
Reason: Licence No. E/HQ/TN22377
Location: Chennai (E42667)
Date: 2022.01.21.09:27:25 +05:30

(सं. VIII/Sec. 311)

मैगजीन में वर्ग 1, 2, 3, 4, 5, 6, और 7 के विस्फोटकों को किसी या प्रयोग हेतु रखने के लिए प्रत्येक एन.ई. 3 (अनुबंध 3) (ख) में (ग) में सुझा विस्फोटक निपटारक या विस्फोटक निपटारक द्वारा प्रदान किए जाने वाले अनुबंधित सं. E.1115/TN/22377 (E.42667) की शर्तें निम्नलिखित हैं।
The following are the conditions of license number E.1115/TN/22377 (E.42667) in process for sale of sub. explosives of Class 1, 2, 3, 4, 5, 6 and 7 in a magazine in Form E.E-3 (articles 3(b) to (c)) granted by Chief controller of Explosives or Controller of Explosives.

1. मैगजीन में किसी भी वर्ग के विस्फोटकों की मात्रा अनुदान योग्य क्षमता से अधिक नहीं होगी।
The quantity of explosives in the magazines at any one time shall not exceed the licensed capacity.
2. विस्फोटकों के भंडारण के लिए अनुबंधित होने वाली मैगजीन अनुबंध 111 और अनुबंधित के उपबंध में विनिर्दिष्ट सुरक्षा दूरी बनाए रखना होगा।
The magazine used for storage of explosives shall maintain safety distance specified in Schedule III and annexure to the license.
3. मैगजीन का प्रयोग उन सभी विस्फोटकों के जो इस अनुबंध में विनिर्दिष्ट हैं, रखे जाने के लिए और ऐसे रखे जाने से संबंध आधान या जोखार या उपकरणों के रखे जाने के लिए ही किया जाएगा, अन्यथा नहीं।
The magazine shall be used only for keeping all explosives specified in the license and of receptacles for, or tools or implements for work connected with the keeping of such explosives.
4. पैकेजों को खोलने का कार्य और विस्फोटकों को तोड़ने तथा पैक करने का कार्य मैगजीन में नहीं किया जाएगा।
The opening of packages and the weighing and packing of explosives shall not be carried on in the magazine.
5. दो या दो से अधिक वर्गों के विस्फोटकों को, किन्तु मैगजीन में रखे जाने की अनुमति दी जा सकती है, मैगजीन में रखे जाने तक उन्हें ही प्रत्येक को, ऐसे पैकेज या कंटेनर का कोई सहायकी विभाजन उपकरण या उनके बीच ऐसा सहायकी स्थान जोड़कर, रखकर पृथक कर दिया जाए कि किसी कच्चे से विस्फोटक से रखे जाने तक विस्फोटक किसी अन्य वर्ग के विस्फोटक तक न पहुंच सके - परंतु -
(क) 2 (नाइट्रो गैसिया), वर्ग 3 (नाइट्रो गैसिया), के विभिन्न विस्फोटक वर्ग 5 प्रथम प्रयोग के अंतर्गत अन्य कठे सुरक्षा पत्रों और वर्ग 6 प्रयोग 2 के अंतर्गत आनेवाले विस्फोटक प्रत्येक पत्रों, निम्न कार्य सुना जाते या इस्तेमाल नहीं है, एक दूसरे के साथ किन्तु किसी सहायकी विभाजनक या स्थान के रखे जा सकते हैं।
(ख) वर्ग 5 प्रयोग 3 के अंतर्गत आनेवाले विस्फोटक प्रत्येक अलग रखे जाएंगे।
(ग) वर्ग 1 के अंतर्गत आने वाले बलक को अलग रखा जाएगा।
Two or more description of explosives which may be permitted to be kept in the magazine shall be kept only if they are separated from each other by an intervening partition of such substance or character, or by such intervening space, as will effectually prevent explosion or fire in the one communicating with the other. Provided that—
(a) the various explosives of Class 2 (nitro-nitrate), Class 3 (nitro-compound), nitro gases belonging to Class 6 Division 1 and detonating fibres belonging to Class 6 Division 2 as do not contain any exposed iron or steel, may be kept with each other without any intervening partition or space.
(b) Detonators belonging to Class 6 Division 2 shall be kept separately.
(c) Gun powder belonging to Class 1 shall be kept separately.
6. वर्ग 3 (नाइट्रो गैसिया) के विस्फोटकों को, उनके विनिर्माण की तारीख से एक वर्ष बीत जाने के पश्चात किसी अनुदान प्राधिकारी की विशेष मजूरी के मैगजीन में नहीं रखा जाएगा।
Explosives of Class 3 (nitro compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of licensing authority.
7. वर्ग 3 (नाइट्रो गैसिया) के विस्फोटकों को, उनके विनिर्माण की तारीख से एक वर्ष बीत जाने के पश्चात मैगजीन में रखा जा सकता है जब कि किसी विस्फोटक निपटारक में इसके लिए विशेष मजूरी दी हो।
(क) जब एसी मजूरी दी हो गई हो तो प्रत्येक निरीक्षण पर किसी विस्फोटक निपटारक में ऐसा विहित प्रमाण उपलब्ध कर दिया जाए जिसमें दी गई मजूरी के अंतर्गत आनेवाले अथवा दक्षिण की गई हो और ऐसे प्रमाणों के अनुपस्थिति अन्य पर रखा जाए और वर्ग 3 की जांच पर प्रस्तुत करेगा।
(ख) जब कोई विस्फोटक मानक सुधलता का न रह जाने के कारण या इकाईकरण या नाइट्रो गैसियम में या इन नाइट्रो गैसिया के निकल जाने के बिना प्रकट होने के कारण मैगजीन में भंडारित किए जाने के उपयुक्त नहीं रह जाता है तो अनुपस्थिति अन्य ही जांच पर ऐसे विस्फोटक के निपटारे के लिए ऐसे निदेशों का अनुदान करेगा जो प्रत्येक निपटारक विप्रेषण करी करें।
Explosives of Class 3 (nitro compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of the Controller of Explosives.
(a) When such sanction has been given, a written certificate showing the period covered by the sanction shall be obtained from the Controller of Explosives at each inspection, and shall be kept by the licensee and produced on demand.
(b) When an explosive owing to its being no longer of standard purity or owing to signs of decomposition or of evolved nitro-glycine or liquid nitro-compound or liquid nitro-compound is no longer fit for storage in the magazine or store house the licensee shall comply, at his own expense, with such directions as to its disposal as the Chief Controller or Controller of Explosives may issue.
8. मैगजीन के भीतरी भाग या दूसरी तली बेंचो, शेल्फों और टिबिंग फिटिंगों का इस प्रकार संरक्षित किया जाएगा या उन्हें इस प्रकार संरक्षित कि अवशरित किया जाएगा कि विस्फोटक का किसी छोटे या दूरवाले के साथ संपर्क होना या सके। भीतरी भाग में तली बेंचो, शेल्फों और टिबिंग फिटिंगों पर प्रयोग किए जाने वाले ऐसे विस्फोटकों को जो नाले या सहायक रूप में प्रयोगित हो सकते हैं, इस प्रकार संपर्क साधने की बंदी जाएगी कि कच्चे कोई जल भीतर न रहे - परंतु किसी छोटे या दूरवाले के सुने होने के विना सके साधने से संबंधित इस बात का यह भाग ऐसे किसी भाग में कार्यकर नहीं होगा जिसमें वर्ग 6 (गैस बलक) के प्रयोग के विस्फोटक से निकल कोई विस्फोटक रखा गया है।
The interior of the magazine and the benches, shelves and fittings therein shall be so constructed as to avoid contact as far as practicable with the explosives. Such benches, shelves and fittings shall, so far as is reasonably practicable, be kept free from gas and shall otherwise be clean and in the case of any explosives liable to be decomposed or affected by water, due precautions shall be taken to exclude water therefrom.
Provided that so much of this condition as relates to, precautions against the exposure of any iron or steel shall not be obligatory in a building or structure in which no explosive other than explosives of the 1st Division (nitro Ammonium) Class is kept.
9. यदि लॉडिंग बालक का परीक्षण विप्रेषण करता है तो अनुपस्थिति एसी परीक्षण के लिए किंतु फीस का सदका करेगा यदि परीक्षण अवसाधनकारी साधित होता है तो उसने ही फीस अनुपस्थिति द्वारा परीक्षण प्रत्येक परीक्षण के लिए एक एक दो करोड़ रुपए जब तक कि परीक्षण अधिकारी लॉडिंग बालक को समाप्तपत्र घोषित नहीं करेगा।
परंतु किसी एक परीक्षण के लिए एक फीस किसी एक दिन के दौरान किसी बालक के लिए एक एक परीक्षण के लिए प्रभावित होगा।
परंतु यह और कि यदि दो या अधिक लॉडिंग बालक एक ही मैगजीन से संबंध हैं तो ऐसे सभी बालकों के परीक्षण के लिए फीस एसी किसी फीस से अधिक नहीं होगी जो किसी एक लॉडिंग बालक के परीक्षण के लिए हर निधि में निहित की गई है।
If the lighting conductor is tested by the Controller of Explosives, the licensee shall pay the fees prescribed for test. In the event of the test proving unsatisfactory, the same fee shall be payable by the licensee for each subsequent test until the lighting conductor is passed by the testing officer as satisfactory.
Provided that the fees payable for a single test shall be charged for all tests made on a conductor during any one day.
Provided further that where two or more lighting conductors are attached to one and the same magazine, the fee for the testing of all such conductors shall not exceed the fee prescribed in this condition for testing a single lighting conductor.
10. उपयुक्त ताले जैसे लॉडिंग कार्यकरण रखें, उपयुक्त मजूरी के प्रयोग द्वारा तथा लॉडिंग ताले या अन्यथा अथवा ऐसे किसी स्थानों अंतर्गत इस बालक संपर्क उपकरण किया जाएगा कि किसी विस्फोटक में अथवा विप्रेषणकारी अथवा ऐसे कोई लॉडिंग या प्रदर्शन, किसी विस्फोटक हो सकता है या जाने लग सकता है, किन्तु इस बात के कारण एसी संरचना, किसी या बलक में किसी कृत्रिम शक्ति का प्रयोग नहीं है जिससे जल सुखे या विस्फोटक होने का कारण न हो।
परंतु इस बात का यह भाग, जो लॉडिंग या इस्तेमाल के अंतर्गत को लागू होता है, एक किसी भाग में संबंध में बाध कर नहीं होगा जिससे निकल कोई विस्फोटक नहीं रखा गया है।
Due provisions shall be made, by the use of suitable working cordage without pockets, suitable lines and by searching or otherwise as by such means, for preventing the introduction into danger area of the factory premises of fire, lighter matches or any substance or article likely to cause explosion or fire. But this condition shall not prevent the introduction of an artificial light of such construction, position or character as not to cause any danger of fire or explosion.
Provided that so much of this condition as applies to the exclusion of iron or steel shall not be obligatory in a building in which no explosive other than an explosive of the 1st Division of the Nitro Ammonium Class is kept.

11. अनुज्ञापिकाधी प्रमाणे आर ६-३ और आर ६-४ या आर ६-३, रखा स्थान हो, म तथा विस्फोटका का अचलित और टाखा रखाण और विस्फोटक नियम, 2008 के अर्धीन प्राणविक्रम किरी भी अधिकारी के समक्ष उसके कक्षा ऐसा करने की योग की जाने पर स्टोक पुस्तक और अभिलेख प्रस्तुत करना। स्टोक पुस्तक लिखित प्रमाणों में पूरा सहायित होगी।
The licensee shall keep records and accounts of all explosives in Forms RI-3 and RI-4 or RI-5 as the case may be, and exhibit the stock books and records to any of the officers authorized under the Explosives Rules, 2008 whenever such officer may call upon him to do so. The stock books in the prescribed form shall be page numbered.
12. परिवर्तन या संशोधन अनुज्ञापन प्राधिकारों के पुनर्जांचन किन्हीं नवीं की जायेगी और अनुज्ञापिका ऐसी किरी शर्त का अनुपालन करेगा जो इस निमित्त अनुज्ञापन प्राधिकारी विनियमित करे।
No changes or alterations shall be carried out in the premises without prior approval of the licensing authority and the licensee shall comply with any condition that may be specified by the licensing authority in this behalf.
13. मैगजिन सभी समय पर अच्छी संरक्षण की स्थिति में बचाई रखी जायेगी, या जबकी इच्छा में बचाई रखी जायेगी। यदि किरी बरतनवा किरी विस्फोटक के धराहरण के लिए मैगजिन अनुपयुक्त हो जाये है तो अनुज्ञापिका दस बत्त की सूचना अनुज्ञापन प्राधिकारों को दुरत देगा।
Magazine shall at all times be kept in state of good repair (as mentioned in good conditions). The licensee shall report to licensing authority forthwith, if the magazine becomes unfit for storage of any explosives for any reason whatsoever.
मैगजिन का अनुज्ञापिका दस नियमों के विधम 24 के उप-विधम 3 के अनुसार तैयारिक विवरणी प्रस्तुत करेगा।
The licensee of the magazine shall submit quarterly returns as per sub-rule (3) and (4) of rule 24 of these rules.
14. यदि सुरक्षा दूरी का कोई अधिकांश होना है तो उसकी सूचना अनुज्ञापन प्राधिकारों को आवश्यक सहाय और कार्रवाई के लिए दुरत दे जायेगी।
Any encroachment of the safety distance shall be immediately communicated to the licensing authority for necessary advice and action.
15. यदि कोई विस्फोटक निम्न हुआ अथवा अनुपयोगी जाया जाता है तो उसकी सूचना अनुज्ञापन प्राधिकारों को, सहाय प्राप्त करने के लिए, दुरत दे जायेगी।
The licensing authority shall be immediately informed if any explosive is found deteriorated or unusable.
16. विस्फोटकों के पैकेटों के परे इस प्रकार लगाए जायेगे कि कम से कम एक व्यक्ति अचलित किरी नए सभी पैकेटों की इच्छा की जाये करे और प्रत्येक पैकेट की विनियमित स्थितिओं को पढ़ने के लिए उनके बीच से होकर जाये सके।
The explosive packages shall be stacked in such a way, so as to allow movement of at least one person to check the condition of all packages stored and to read the manufacturer's particulars of each package.
अच्छत बालको की धूम के लिए प्रतिकार यथासंभव अनुपालन होगा और किरी भी दवा में 10 लोग से अधिक नहीं होगा।
The clearance of the lightning conductor to earth shall be at least 20 metres and in no case be more than 10 items.
17. मैगजिन के चारों ओर 15 मीटर की दूरी के अर्थात् कोई बुल्डोजर या ट्रैक्टर या अवलंबनीय सामग्री नहीं रहने दी जायेगी।
A distance of 15 metres surrounding the magazine or store house shall be kept clear of stored grass or hay or flammable materials.
18. विस्फोटकों के प्रत्येक पैकेट की, जब उसी मैगजिन के भीतर रखा जा रहा हो, खोज दशा जानने के लिए परीक्षा की जायेगी।
Every package of explosive at the time of bringing inside the magazine shall be examined for its sound condition.
19. किरी मैगजिन भंडारण में किरी एक समय में दस तकियों से अधिक को नहीं रहने दिया जायेगा।
Not more than 10 persons shall be allowed inside the magazine at any one time.
20. विस्फोटकों के खाली पैकेटों की खोजीबीछ वहाँ से हटा दिया जायेगा और नष्ट कर दिया जायेगा।
Empty packages of the explosives shall be removed at the earliest and destroyed.
21. अनुज्ञापिका और कर्मचारी को परिवर के भीतर अज्ञातगत के दौरान की जाने वाली प्रक्रियाओं से अवगत होना चाहिए।
The licensee and the employee shall be conversant with procedure to be taken during the emergency within the premises.
22. निरीक्षण या सहाय अधिकारियों को सभी सुविधाएँ बालको या अनुज्ञापन परिवर में अवकाश रूप से उपलब्ध दिया जायेगा और यह सुनिश्चित करने के लिए कि अधिकांश और दस नियमों के उपलब्ध और सुरक्षा स्थिति की संव्यवस्था अनुपालन किया जा रहा है, अधिकारियों को प्रत्येक सुविधा प्रदान की जायेगी।
Free access to the licensed premises shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act and these rules and the safety conditions are duly observed.
23. यदि अनुज्ञापन प्राधिकारों या विस्फोटक निषेधक अनुज्ञापिकाओं को अनुज्ञापन परिवरों का समीचीन दूर या उपकरण में ऐसी कोई परमाणु या परिवर्तन या परिवर्तन करने का विचारों को सहाय करने की स्थिति अन्य में सुचित करता है जो परिवर के अंदर या बाहर या व्यक्तियों की सुरक्षा के लिए आवश्यक है, अनुज्ञापिकाओं किरी शर्तों को निष्पादित करेगा और विनियमित अर्थों के भीतर अनुपालन विधों ऐसी प्राधिकारों को देगा।
If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to evacuate any persons or to make any alterations or additions to the licensed premises or machinery, tools or apparatus or carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and are necessary for the safety of other persons at the premises or persons, the holder of the licence shall observe the recommendations and terms compliance within the period specified by such authority.
24. अनुज्ञापिका मैगजिन में दस और किरी के लिए प्रतिकार विस्फोटक दूरी में प्रतिबंधित अनुज्ञापन पैकेटों में बालको में प्रतिकार विस्फोटक अधिकारियों या सुरक्षा दूरी को खरीदना।
The licensee shall purchase authorized explosives fireworks or other fire as mentioned in the list authorized explosives from a licensed factory or company or person and sale from the magazine.
25. निम्न से अधिक बालको कर उपलब्ध करने काट अधिकांश किरी बालको को किरी और बालको के लिए -
(क) जो बालको की लंबाई से कम मीटर की दूरी पर है, 25 टो बी (ट) या 143 टो बी (सी) के प्रतिबंधित होगी।
(ख) जो बालको लंबे हुए पैकेटों को गठन करने वाले व्यक्तियों पैकेटों के लिए उपयुक्त अचलित मीटर 4 टो बी (एच) या 10 टो बी (सी) के प्रतिबंधित होगी।
The possession and sale of fireworks generating noise level exceeding 125 dB(A) at 100 metres distance from the point of firing shall be prohibited.
26. हर अचलित फायरवर्क संवलीयते के साथ (जुनैड फायरवर्क), the above mentioned items be reduced by 3 dB(A) (N) dB, where N = number of crackers joined together.
26. अगर या किरी कोई बालको सुरक्षा या सुरक्षाण गटारों की कमी या घटी, दुरत प्राप्त के पुरित करने और अनुज्ञापन प्राधिकारों और अनुज्ञापन प्राधिकारों के अर्धीन कार्रवाण की विधों की जायेगी।
Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority.

अतिरिक्त शर्तें (Additional Conditions)

1. अनुज्ञापिका किरी दूर के अधिकांश किरी या सहाय करेगा, या रखाण और या ही उसकी किरी करेगा। The licensee shall not receive, possess and sell fireworks of foreign origin.

सुनील कुमार विस्फोटक निषेधक
For Chief Controller of Explosives

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

Digitally signed by Dr T L. Thangaraj
Reason: Licence No. : EHQ/TW22/27
Location Chennai (E426E7)
Date:2022.01.20 04:27:20 +05:30

Form DE-2
(See rule 113 of the Explosives Rules, 2008)
(Distance Form to be attached to the licence)

Safety distances required to be kept clear around magazine for high explosives or fire works or factory licence number E/HQ/TN/22/377(E42667) in form I.E-3 granted to M/s Senthil Explosives., 20, PANCHAVAT OFFICE STREET, SULUR, COIMBATORE Dist., Tamil Nadu.

Type of Structure(s)	Safety distances meters	
	M	CM
Inside Safety Distances(ISD)		
1 Room or Workshop used in Connection with the Magazine	44	
2 Any other Explosives Magazine or store House or Factory of the Applicant		
3 Magazine Office		
Middle Safety Distances(MSD)		
4 Magazine Keeper's or Chowkidar's Dwelling house		
5 Railway including Minerals and Private Railways		
6 Canal (in active use) or other navigable water		
7 Dock or Pier or Jetty		
8 Public Highway or Public Road		194
9 Private Road which is PRINCIPAL means of access to a Temple, Mosque, Church, Gurudwara or other places of worships, Hospital, College, School or Factory		
10 River Embankment or Sea Embankment or Public Well		
11 Reservoir or Bounded tank/rope way		
12 Windmill or Solar panel for Power Generation		
Outside Safety Distances(OSD)		
13 Dwelling House		
14 Govt. and Public Building		
15 Temple, Mosque, Church or Gurudwara or other Places of Worships		
16 Shops, Market place, Public recreation and Sports Ground, College, School, Hospital, Theater, Cinema or other Building where the public are accustomed to assemble		
17 Factory		
18 Buildings or Works used for the Storage in Bulk of Petroleum, Spirit, gas, or other inflammable or hazardous substances		387
19 Building or Works used for Storage and Manufacture of Explosives or of articles which contain Explosives		
20 Aerodrome		
21 Furnace, Kiln or Chimney		
22 Quarry or mine pit head		
23 Power House or Electric Substation		
24 Wireless Station		
25 Warehouse or other Storage Building		
26 Any other Protected works		
Overhead Electric lines		
27 Electric Power over head Transmission Lines above 440V		90
28 Electric Power over head Transmission Lines upto 440V		15

The Date : 23/09/2021

For: Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives Monthly Purchase Limit dated : 27/08/2013
- Amendment of Quantity of Explosives Monthly Purchase Limit dated : 29/08/2018
- Amendment of Quantity of Explosives Monthly Purchase Limit dated : 07/01/2019
- Amendment of Quantity of Explosives Monthly Purchase Limit dated : 20/01/2022

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

Digitally signed by Dr T. S. Tharuvangam
Reason: Licence No. E/HQ/TN/22/377
Location Chennai [E42667]
Date:2022.01.20 04:27:07 +05:30

Cert No. BR/SZ/0091



सत्यमेव जयते



भारत सरकार/Government of India
खान अधिनियम, 1952/Mines Act, 1952
खनन परीक्षा बोर्ड/Board of Mining Examinations
विस्फोटकर्ता सक्षमता प्रमाण-पत्र
BLASTER'S CERTIFICATE OF COMPETENCY
(केवल ओपनकास्ट खानों तक सीमित)
(Restricted to mines having opencast workings only)
(धात्विकीय खान विनियम, 1961 के अन्तर्गत)
(Under the Metalliferous Mines Regulations, 1961)

श्री

सुपुत्र

जिनकी जन्म तिथि

है, को अपनी आयु, स्वस्थता, सदाचार,

साक्षरता और धात्विकीय खानों में काम करने के विहित अनुभव का सन्तोषजनक प्रमाण प्रस्तुत करने एवं दिनांक

को

केन्द्र पर आयोजित विहित परीक्षा में

उत्तीर्ण होने पर एतद्वारा केवल ओपनकास्ट खानों तक सीमित विस्फोटकर्ता सक्षमता प्रमाण-पत्र प्रदान किया जाता है।

Shri **SAKTHIVEL S.** son of **S. SEKAR**
born on **15TH MAY, 1984 (EIGHTY FOUR)** having given satisfactory evidence of his age, medical fitness, good character, literacy and prescribed experience of working in metalliferous mines and having passed the prescribed examination held at **GVTC, CHICKANAYAKANAHALLY** centre on **31.03.2012** is hereby granted **BLASTER'S CERTIFICATE OF COMPETENCY** restricted to mines having opencast workings only.

बाएं हाथ के अंगूठे का निशान

Left hand thumb impression

अंचल सचिव

खनन परीक्षा बोर्ड

Zonal Secretary

Board of Mining

अंचल सचिव

खनन परीक्षा बोर्ड

दक्षिणी अंचल, बंगलूरु

Zonal Secretary

Board of Mining Examinations

अध्यक्ष

खनन परीक्षा बोर्ड

Chairman

Board of Mining



தமிழ்நாடு தமில்நாடு TAMILNADU

₹. 5000/-

L 571635

அ. கலைச்செல்வன்,
தலைவர் (தொழில்நுட்ப அமைச்சு)
தலைவர் அலுவலகம் : 52/2000
கா: 7023
தே: 23-11-2012

சோமசுந்தரம்
கா. - 603101



பாகபாத்திய விடுதலை அடவணம்

2012 ம் ஆண்டு நவம்பர் மாதம் 26 ம் தேதி பொள்ளாச்சி வட்டம் அரசும்பாளையம் கிராமம் மஜரா கார்ச்சேரியில் வசிக்கும் வேட.வேலுச்சாமி மகன் திரு.சோமசுந்தரம் (வாக்காளர் அடையாள அட்டை எண் KMS1977560) ஆகிய உங்களுக்கு

பொள்ளாச்சி வட்டம் அரசும்பாளையம் கிராமம் மஜரா கார்ச்சேரியில் வசிக்கும் வேட.வேலுச்சாமி மனைவி திருமதி.பு மாத்நாள் (வாக்காளர் அடையாள அட்டை எண் TN/21/108/0036371) -1

திரு. சுவாந்தரன் இயக்கு



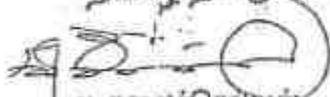
E. vijaya kumar



தமிழ்நாடு தமிழ்நாடு TAMILNADU

₹. 5000/-

L 571656


 கு. கமலச்செல்வன்,
 தலைநகரம்: விழிப்பூம்பட்டினம்
 தமிழ்நாடு, உ.பி.பி.எண் : 52/2000
 எண் : 17029
 திகதி : 23.11.2012

கோவை மாவட்டம்
 காரைக்காலம்.



2

பொள்ளாச்சி வட்டம்க் பள்ளங்கரை கிராமம் மஜரா குருவேகவுடல்
 பாளையத்தில் கதவு எண் 6/4 என்ற விவசாயத்தில் வசிக்கும் லேட்.வேலுச்சாமி
 மகனும் திரு.ஏகநாதமூர்த்தி அவர்கள் மனைவியுமான திருமதி.விஜயகுமாரி
 (வாக்காளர் அடையாள அட்டை எண் KMS1211481) -2 ஆகிய நாங்கள் இருவரும்
 சேர்ந்து சம்மதித்து எழுதி/கொடுத்த பாகபாத்திய விடுதலை ஆணை
 என்னவென்றால்.

கே. சி. சுவாமிநாதன் கையொப்பம்



E. vijaya kumar



நீங்கள் எங்களில் 1 லக்கமிட்டவருக்கு மகளும் 2 லக்கமிட்டவருக்கு உடன்பிறந்த சகோதரனும் ஆகும். கீழ்க்கண்ட சொத்துக்கள் 1 லக்கமிட்டவரின் கணவரும் 2 லக்கமிட்டவருக்கும் உட்கருக்கும் தகப்பனாராமான லேட் வேலுச்சாமிக்கவுண்டருக்கு 26.10.1968 தேதியில் கிணத்துக்கடவு சபரி ஆபீசில் 1 புத்தகம் 309 தொகுதி 83 முதல் 89 வரை பக்கங்களில் 1968 ம் ஆண்டின் 967 எண்ணாக பதிவான பாகசாசன ஆவணத்தில் பி ரெடியூவில் கூறப்பட்ட சொத்துக்கள் பாத்தியப்பட்டு அவர் அனுபவித்து வரும் பொது எல்வித ஏற்பாடுகளும் செய்து வைக்காமல் காலமாகிவிட்ட படியால் இந்து வாரிசரிமைச்சட்டப்படி உங்களுக்கும் எங்களுக்கும் கூட்டாக பாத்தியப்பட்ட கீழ்க்கண்ட சொத்துக்களை இதுநாள் வரை நீங்களும் நாங்களும் பொதுவாகவும் கூட்டாகவும் வைத்து அனுபவித்து வந்தோம். நம்முடைய பொது அனுபோக கவாநீனத்தில் இருந்து அனுபவித்து வந்த சொத்துக்களில் எங்களுக்கு பிரிபட்ட 3 ல் 2 பங்கு பாத்தியத்தை நீங்களே வைத்துக்கொண்டு எங்களுக்கு தலா ரூபாய் 50,000/- (ஐம்பதாயிரம்) கொடுத்தால் போதும் என நாங்கள் கேட்டுக்கொண்டதற்கு நீங்களும் சம்மதித்துள்ள படியால். எங்களுக்குள்ள 3 ல் 2 பங்கு பாகபாத்தியத்திற்காக ரூபாய் 1,00,000/- (ஒரு லட்சம்) பெற்றுக்கொண்டு எங்களுக்குள்ள 3 ல் 2 பங்கு பாகபாத்தியத்தை இதன் மூலம் விடுதலை செய்து கொடுத்து கீழ்க்கண்ட சொத்துக்களையும், நாளது தேதியிலேயே உங்களுடைய அனுபோக கவாநீனத்தில் விட்டு நீங்களும் கவாநீனமும் அனுபோகமும் பெற்றுக் கொண்டுள்ள படியால், நாளது தேதி முதல் கீழ்க்கண்ட சொத்துக்களைப் பொறுத்து எங்களுக்காவது எங்கள் உள்ளிட்ட வாரிசு வகையறா பேர்வழிகளுக்காவது எல்வித முன்பின் பாத்தியா பாத்தியங்களும் கிடையாது என உண்மையாகவும் உறுதியாகவும் கூறுகிறோம். நாளது தேதி முதல் கீழ்க்கண்ட சொத்துக்களை உங்களுடைய இஷ்டம் போல் சர்வ சுதந்திரமாக தானாதி விவிய கிரைய விற்கிரையங்களுக்கு யோக்கியமாக புத்திர பெளத்திர பாரம் பரியமாய் ஆண்டு அனுபவித்து கசத்திலிருக்கவும். கீழ்க்கண்ட சொத்துக்கள் உங்களுடைய பெயரில் பட்டா மாறுதலாக பட்டா ராஜீவமாவும் இத்துடன் கொடுத்துள்ளோம். கீழ்க்கண்ட சொத்துக்கள் அரசம்பாணையம் கிராம எல்லைக்கு உட்பட்டது.

354 கவாநீனம் வைப்பு



E. Vijaya Kumari



உ
தகா துரை
பொன்னாச்சி

வியாபாரம்

க.ச 359/1A நெ காலை பு.ஹெக் 0.18.5 க்கு பு.ஏ. 0.46 க்கு தீ.ரு 0.37 (முழுப்புலம்)
 க.ச 360/1B நெ காலை பு.ஹெக் 1.98.5 க்கு பு.ஏ. 4.90 க்கு தீ.ரு 3.98 (முழுப்புலம்) இந்த
 சொத்தும் இதிலுள்ள து.கிணர் 1 ம் அதில் வைத்துள்ள 5 எஃபி இனம்பி செட் 1 ம் மின்
 இணைப்பு எண் 366 ம் அதன் காப்புத்தொகை கடிம் சகிதம்.

க.ச 360/1D நெ காலை பு.ஹெக் 0.04.0 க்கு பு.ஏ. 0.10 க்கு தீ.ரு 0.08 (முழுப்புலம்)

க.ச 360/1E நெ காலை பு.ஹெக் 0.05.5 க்கு பு.ஏ. 0.14 க்கு தீ.ரு 0.10 (முழுப்புலம்)

க.ச 360/1G நெ காலை பு.ஹெக் 0.70.5 க்கு பு.ஏ. 1.74 க்கு தீ.ரு 1.41 (முழுப்புலம்)

பின்னும் க.ச 360/1E நெ காலை பு.ஹெக் 0.14.0 க்கு பு.ஏ. 0.35 க்கு தீ.ரு 0.28 இதில்
 பொதுவில் சரிபாதி பு.ஹெக் 0.07.0 க்கு பு.ஏ 0.17 ½ செண்ட் பொதுவிடம். இந்த
 சொத்தும். மேற்படி பொது பூமியிலுள்ள து.கிணர் 1 லும் அதில் வைத்துள்ள 5 எஃபி
 இனம்பி செட் 1 லும் அதன் மின் இணைப்பு எண் 170 லும் அதன் காப்புத்தொகையினும்
 பொதுவில் சரிபாதி பாத்தியமும் வீதாஃ ரார்படி இறுவை பாத்தியமும் சகிதம். ஆக
 ஒட்டு பு.ஏ 7.51 ½ இந்த சொத்துக்கள் சகிதம்.

நென்வடல் இட்டேரியிலிருந்து நேர் மேற்காக பழனிச்சாமி பூமியில்
 வடகோட்டில் கிழமேலாக வந்து வின் பெருமாள்சாமிக்கவுண்டர் பூமியிலும்
 குமாரசாமிக்கவுண்டர் பூமியிலும் வடக்கே திரும்பி பின் குமாரசாமிக்கவுண்டர் பூமியில்
 மத்தியில் மேற்கே வந்து பின் வடக்காக 359/3E, 3D, 3B,3A நெ காலை வரை வடக்கே
 வந்து பின் மேற்காக திரும்பி 360/1G, D, 1F, 1B, 1E நெ காலைகளுக்கு மாமுல்படி
 போய்வரும் தட பாத்தியமும் 360/1E நெ காலை கிணறு வரை மாமுல்படி போய்வரும்
 வண்டத்தட பாத்தியங்கள் சகிதம்.

கீதல் துவத்தாள் கையொ


F. Vijaya Kumari

சென்னை
 மார்ச் 4, 1991/2019
 மாவட்ட வருவாய்துறை
 6 10
 சென்னை
 மாவட்டம்

க.ச 329/1 நெ காலக்கு கிழமேலாகவும் தென்வடலாகவும் போகும் மாமூல் இட்டேரி வழியாகவும் வந்து விஸ்வநாதன் யூனியில் வடக்கே போகும் நடத்தின் வழியாக ஆட்கள், கால்நடைகள், வண்டி வாகனங்கள் கரைக வாகனங்கள் போய்வரும் தட பாத்தியமும் மூல ஆவணத்தில் கண்டுள்ள தட பாத்தியம் மற்றும் சகல பாத்தியங்களும் இந்த ஆவணத்திற்கு பொருந்தும். மேற்படி சொத்துக்களுக்கு மாமூல்படி போகவர உள்ள வழிநடை வண்டி வாகனம் ஆள் கால்நடை கரைக வாகனம் போய்வரும் தட பாத்தியமும். மாமூல்படி உள்ள வாய்க்கால் பாத்தியமும் சகிதம்.

ஆக மேற்கண்ட சொத்துக்களில் பொதுவில் 3 ல் 2 பங்கு பாத்தியம் சகிதம். மேற்படி சொத்தில் தற்கால மார்க்கட் மதிப்பு சுமார் ரூபாய் 30,00,000/- பெறும் இதில் நாங்கள் கைவிடும் 3 ல் 2 பங்கு மதிப்பு சுமார் ரூபாய் 20,00,000/- பெறும்

இதில் நாங்கள் கைவிடும் 3 ல் 2 பங்கு மதிப்பு சுமார் ரூபாய் 20,00,000/- பெறும்

E.vijaya kumari

சாட்சிகள்

K. A. Elanthanathan S/o. A. Arichang,
C. C. Palasam.

சாட்சிகள் S/o. A. Arichang, C. C. Palasam.

N. Jevaranatham S/o. C. Naray,
Rangam P. Kur.

ஆவணம் தயாரித்தவர்

A. JAYAKUMAR B.A
Document Writer
NEGAMMAM
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IDENTITY CARD

ഭാര്യയുടെ പേര് ഉൾപ്പെടെ
കുടുംബാംഗങ്ങളുടെ പേരുകൾ
KMS1977343



Elector's Name : Srimasularam
 Husband's Name : Ganapathi
 Father's Name : Velusamy
 Husband's Name : Ganapathi
 Sex : Male
 Age as on 1.1.2006 : 27
 1.1.2006 മുൻപ് ജനിച്ചവർ

Address : 137E
 Kumbakonam V.1104
 Kumbakonam
 Tamil Nadu, India
 PIN CODE : 612014

Phone : 137E
 Andhra Pradesh
 Andhra Pradesh
 Government of India
 Sarva Shiksha Mission
 Sarva Shiksha Mission

Facsimile Signature of Electoral Registration Officer
 For 108 - Kumbakonam
 Assembly Constituency

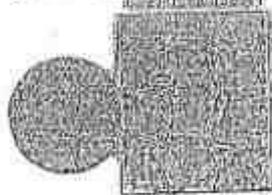


Place : Kumbakonam
 Date : 20/01/2006



ELECTION COMMISSION OF INDIA
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ഭാര്യയുടെ പേര് ഉൾപ്പെടെ
കുടുംബാംഗങ്ങളുടെ പേരുകൾ
KMS1251481

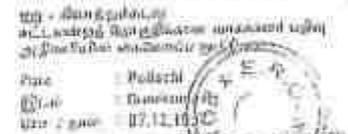


Elector's Name : Ponnathil
 Husband's Name : Ganapathi
 Father's Name : Velusamy
 Husband's Name : Ganapathi
 Sex : Female
 Age as on 1.1.2006 : 60
 1.1.2006 മുൻപ് ജനിച്ചവർ

Address : 92
 Ramachandrapuram (P)
 Pallepeta (M)
 Kumbakonam (M)
 Kumbakonam (M)
 Kumbakonam (M)
 Kumbakonam (M)
 Kumbakonam (M)

Facsimile Signature of the Electoral Registration Officer
 For 108 - Kumbakonam Assembly Constituency

Place : Kumbakonam
 Date : 07.12.2005



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IDENTITY CARD

ഭാര്യയുടെ പേര് ഉൾപ്പെടെ
കുടുംബാംഗങ്ങളുടെ പേരുകൾ
KMS1251481



Elector's Name : Vijayakumar
 Husband's Name : Vijayakumar
 Father's Name : Ananthamoorthy
 Husband's Name : Ananthamoorthy
 Sex : Male
 Age as on 1.1.2006 : 28
 1.1.2006 മുൻപ് ജനിച്ചവർ

Address : 647
 Part 5, Chinnayyapattanam
 Kappalankara
 Kumbakonam
 COMBATORRE - 61200

Phone : 647
 Andhra Pradesh
 Andhra Pradesh
 Government of India
 Sarva Shiksha Mission
 Sarva Shiksha Mission

Facsimile Signature of Electoral Registration Officer
 For 108 - Kumbakonam
 Assembly Constituency



Place : COMBATORRE
 COMBATORRE

Date : 19/12/2005



E. Vijaya Kumari

7
 தலைநகர் தலைநகர்

17/10/2012

Page No. 1 of 1



தலைநகர் தலைநகர் - வட்டம்

தலைநகர் தலைநகர்
 வட்டம் - தலைநகர்

தலைநகர் தலைநகர் - வட்டம்

தலைநகர் தலைநகர்

வட்டம் 368

தலைநகர் தலைநகர்

1 தலைநகர் தலைநகர்

தலைநகர்

தலைநகர் தலைநகர்

பெயர்	வகை	தலைநகர்		தலைநகர்		தலைநகர்	
		பெயர்	தலைநகர்	பெயர்	தலைநகர்	பெயர்	தலைநகர்
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356	2A	-	-	- 44.00	0.88	-	-
359	1A ✓	-	-	- 18.50	0.37	-	-
359	2A	-	-	- 71.00	1.43	-	-
359	3D	-	-	- 69.50	1.37	-	-
360	1B	-	-	1 - 98.50	3.98	-	-
360	1D	-	-	- 4.00	0.08	-	-
360	1F	-	-	- 5.50	0.19	-	-
360	1G	-	-	- 70.50	1.41	-	-
				5 - 33.00	10.45	-	-

3601368.00/1.00 17/10/2012 11:10:02



A. G. M.
 HEADQUARTERS DEPUTY
 TOWNSTEWAR, POLACHI





நில உரிமை (வட்டா / சட்டா) விவரங்கள்

இ. எண் 1 0 (1) பிரிவு
 மாவட்டம் : கோயம்புத்தூர்
 வட்டம் : பொள்ளாச்சி
 கிராமம் : அரசாம்பாளையம்
 வட்டா எண் : 4 7 1



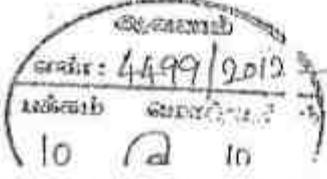
உரிமையாளர்கள் பெயர்

- | | | |
|---------------------------|-------|---------------------|
| 1. நாச்சிமுத்துக்கவுண்டர் | தந்தை | வேலையாபிக்கவுண்டர் |
| 2. நாச்சிமுத்துக்கவுண்டர் | தந்தை | மயிலையாபிக்கவுண்டர் |

புல எண்	உட்பிரிவு	நகர்ப்பகுதி		புறநகர்ப்பகுதி		மொத்தம்	ச. - டை
		பரப்பு	தீர்வை	பரப்பு	தீர்வை		
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360	1E	0	0.28	0 - 14.00	0.28	--	--
		--	--	0 - 26.00	0.52	--	--

குறிப்பு :

- மேற்கண்ட தகவல் / விவரங்களை பரிசீலனை செய்து பெறப்பட்டவை இவற்றை தாங்கள் <http://eservices.tamilnadu.gov.in> என்ற இணைய தளத்தில் 12/03/2017/2017 என்ற குறிப்பு எண்ணை உள்ளிட்டு செய்த உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 2 0 - 1 1 - 2 0 1 2 வரை வட்டாட்சியா அலுவலகத்தில் இருந்து பெறப்பட்டவை.
- இத் தகவல்கள் 2 1 - 1 1 - 2 0 1 2 தன்று 1 1 : 5 9 : 4 8 A 1 குறிப்பில் அச்சடிக்கப்பட்டது.
- ஆலண விவரங்களை மேலும் உறுதி செய்துகொள்ள வேண்டுமெனில் தாங்கள் வட்டாட்சியா IPSP. 17, அரசாம்பாளையம் தொலைபேசு எண் 0437 2222222-ல் அணுகி உறுதிப்படுத்திக் கொள்ளவும்.





TMT.P.RAJESWARI, L.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai-15.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr.No.SEIAA-TN/F.No.8825/ToR-1107/2021 Dated: 21.03.2022.

To

Thiru.M.Loganathan
S/o.MylsamyGounder
West Thottam, Karacheri
Chettipalayam Via
Coimbatore District-641201

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the proposed Rough stone and Gravel quarry lease over an extent of 0.78.5Ha at S.F.Nos.360/1A1 (P), 360/1A2 (P) & 360/1A3 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru.M.Loganathan - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/68062/2021 Dt. 30.09.2021
 2. Your application submitted for Terms of Reference dated: 05.10.2021.
 3. Minutes of the 250th SEAC meeting held on 03.03.2022
 4. Minutes of the 494th Authority meeting held on 21.03.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.


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The proponent, Thiru.M.Loganathan has submitted application for Terms of Reference (ToR) with public Hearing on 05.10.2021, in Form-I, Pre- Feasibility report for the proposed Rough stone and Gravel quarry lease over an extent of 0.78.5Ha at S.F.Nos.360/1A1 (P), 360/1A2 (P) & 360/1A3 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone and Gravel quarry lease over an extent of 0.78.5 Ha at S.F.Nos.360/1A1 (P), 360/1A2 (P) & 360/1A3 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru.M.Loganathan - For Terms of Reference.
(SIA/TN/MIN/68062/2021 Dt. 30.09.2021)

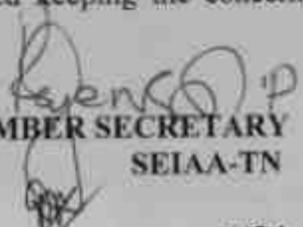
The proposal was placed in 250th SEAC meeting held on 03.03.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Thiru.M.Loganathan has applied for Terms for Reference for the proposed Rough stone and Gravel quarry lease over an extent of 0.78.5 Ha at S.F.Nos.360/1A1(P), 360/1A2 (P) & 360/1A3 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 49,650 m³ of rough stone & 9,068 m³ of gravel with a ultimate depth of mining is 27m below ground level .

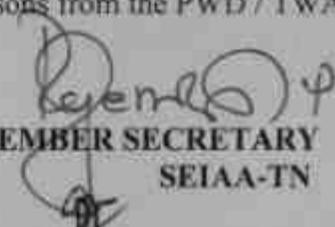
Based on the presentation made by the proponent and the documents furnished, SEAC decided to **recommend the proposal for the grant of Terms of Reference (TOR) with Public Hearing** for the Production for the five years states that total quantity should not exceed 49,650 m³ of rough stone & 9,068 m³ of gravel with a ultimate depth of mining is 27m below ground level, Subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The Proponent shall carry out the Cumulative & comprehensive impact study due to mining operations carried out in the quarry specifically with reference to the environment in terms of air pollution, water pollution, impact on existing agricultural operations & health impacts, accordingly the Environment Management plan should be prepared keeping the concerned


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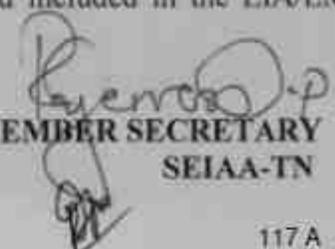
quarry and the surrounding habitations in the mind.

2. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines.
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year.
 - d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
3. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
4. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
5. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
6. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
7. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD


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so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.

8. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
9. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
10. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
11. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
12. The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No, 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).
13. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
14. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
15. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
16. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP


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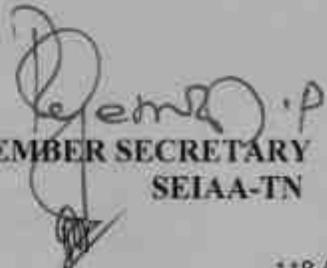
Report.

17. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
18. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
19. The PP shall use drone video to cover the cluster area showing clearly the extent of operation and the surrounding environment and submit the video as part of EIA report.
20. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix

List of Native Trees for Planting

1. *Aegle marmelos* - Vilvam
2. *Adenaanthera pavonina* - Manjadi
3. *Albizia lebeck* - Vaagai
4. *Albizia amara* - Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa* - Iruvathi
8. *Buchanania aillaris* - Kattuma
9. *Borassus flabellifer* - Panai
10. *Butea monosperma* - Murukka maram
11. *Bobax ceiba* - Ilavu, Sevvilavu
12. *Calophyllum inophyllum* - Punnai
13. *Cassia fistula* - Sarakondrai
14. *Cassia roxburghii* - Sengondrai
15. *Chloroxylon sweitenia* - Purasa maram
16. *Cochlospermum religiosum* - Kongu, Manjal Ilavu
17. *Cordia dichotoma* - Mookuchali maram


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18. *Creteva adansonii* - Mavalingum
19. *Dillenia indica* - Uva, Uzha
20. *Dillenia pentagyna* - Siru Uva, Sitruzha
21. *Diospyros ebenum* - Karungali
22. *Diospyros chloroxylon* - Vaganai
23. *Ficus amplissima* - Kal Itchi
24. *Hibiscus tiliaceous* - Aatru poovarasu
25. *Hardwickia binata* - Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* - Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* - Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* - Nuna
37. *Morinda citrifolia* - Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* - Pungam
40. *Premna mollissima* - Munnai
41. *Premna serratifolia* - Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* - Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* - Puthranjivi
48. *Salvadora persica* - Uгаа Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Piraya maram
52. *Strychnos nuxvomica* - Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica* - Thandri

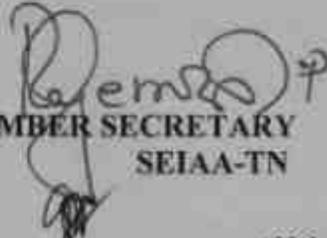

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56. *Terminalia arjuna* - Ven marudhu
57. *Toona ciliate* - Sandhana vembu
58. *Thespesia populnea* - Puvarasu
59. *Walsura trifoliata* - valsura
60. *Wrightia tinctoria* - Vep

Discussion by SEIAA and the Remarks:-

The subject was placed in the 494th Authority meeting held on 21.03.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

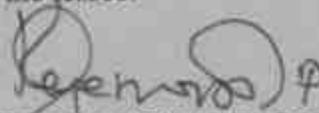
1. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
2. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
3. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
4. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
5. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
7. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
8. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.


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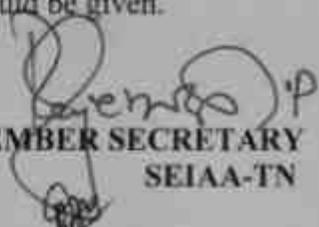
9. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
10. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
11. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
12. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
13. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
14. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
15. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
16. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
17. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.

A. STANDARD TERMS OF REFERENCE

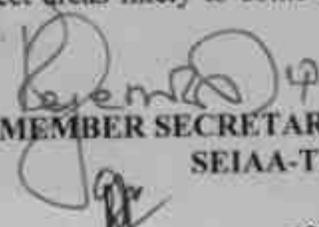
- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.


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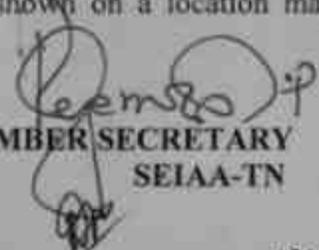
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.


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- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under

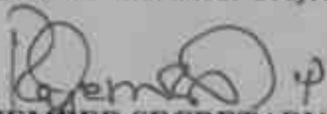

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- the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map


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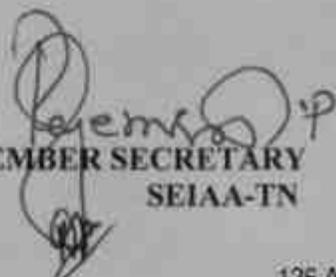
clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected


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increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.


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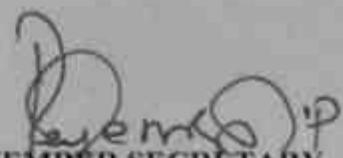
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
- Executive Summary of the EIA/EMP Report
 - All documents to be properly referenced with index and continuous page numbering.
 - Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - Where the documents provided are in a language other than English, an English translation should be provided.
 - The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.


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In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

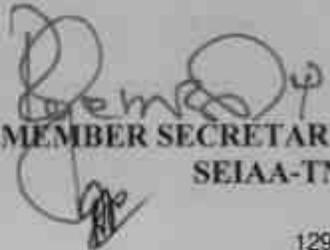
1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)


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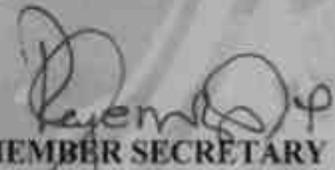

18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.


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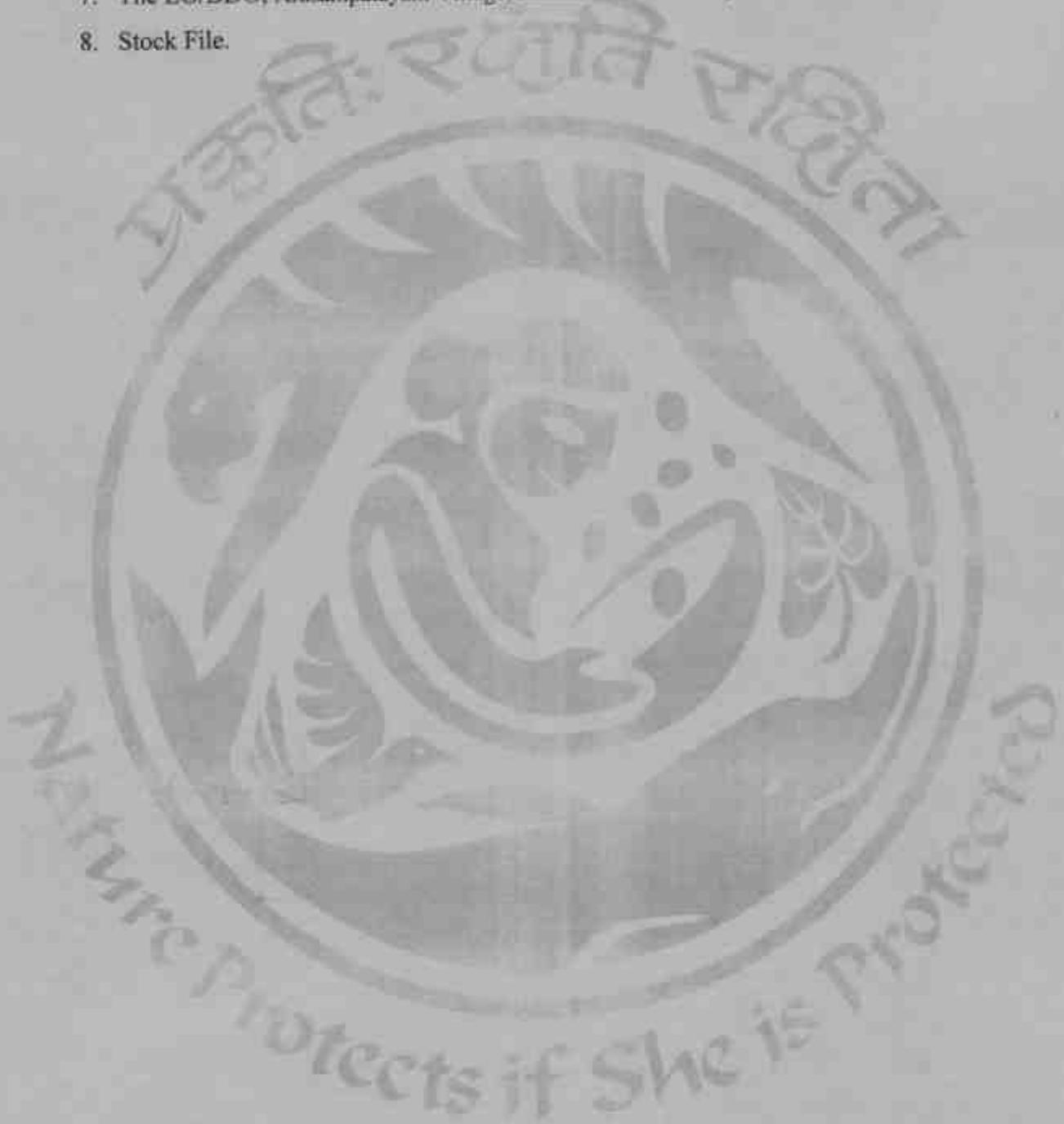
- d. - While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.

5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. The EO/BDO, Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District
8. Stock File.





TMT. P. RAJESWARI, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.8967/SEAC/ToR-1132/2021 Dated:25.03.2022

To

Tmt.M.Rasamani ✓
W/o.K.Marimuthu ✓
Karachery, Periyakuyili Post ✓
Chettipalayam Via ✓
Coimbatore District-641201 ✓

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough stone and Gravel quarry lease over an extent of 0.99.0 Ha at S.F.Nos.361/IA & 362/1 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Tmt.M.Rasamani - under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/ 71698/2021, dated: 31.01.2022.
 2. Your application seeking Terms of Reference submitted on: 02.02.2022
 3. Minutes of the 252nd meeting of SEAC held on 10.03.2022, minutes received on 19.03.2022
 4. Minutes of the 496th meeting of SEIAA held on 24.03.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

The proponent, Tmt.M.Rasamani has submitted application seeking ToR for B1 category project in Form-I, for the Proposed Rough stone and Gravel quarry lease over an extent of 0.99.0 Ha


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at S.F.Nos.361/1A & 362/1 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu has furnished Pre-feasibility report.

Discussion by SEAC and the Remarks:-

The proposal was placed in 252nd SEAC meeting held on 10.03.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

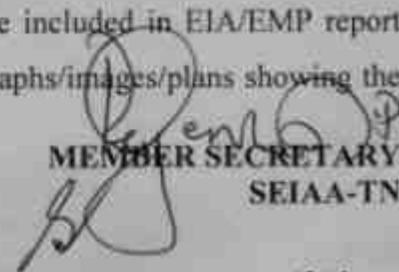
1. The Project Proponent, Tmt.M.Rasamani has applied for Terms for Reference for the proposed Rough stone and Gravel quarry lease over an extent of 0.99.0 Ha at S.F.Nos.361/1A & 362/1 of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu .
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 68,150 m³ of rough stone with a ultimate depth of mining is 41.5m below ground level.

Based on the presentation made by the proponent and the documents furnished, SEAC decided to **recommend the proposal for the grant of Terms of Reference (TOR) with Public Hearing** for the total Production for the period of five years states that total quantity should not exceed 68,150 m³ of rough stone with a ultimate depth of mining is 41.5m below ground level, Subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The Proponent shall carry out the cumulative & comprehensive environmental impact assessment study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, & health impacts, and accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
2. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year
 - d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.

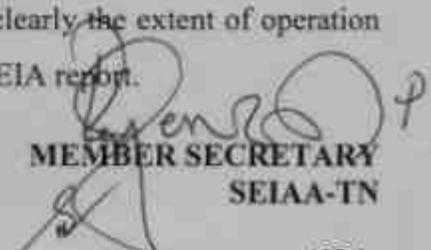

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- g) If EC and CTO already obtained, the copy of the same shall be submitted.
- h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
3. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
 4. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
 5. The Project Proponent shall provide the details of geological reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the proposed mitigation measures for the same.
 6. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
 7. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 8. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
 9. A detailed study shall be carried out in order to ascertain the status of existing trees (nos., name of the species, age, diameter etc..) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
 10. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific, along with the exclusive photographs/images/plans showing the


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proposed conceptual final closure activities .

11. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
12. The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).
13. The purpose of Green belt around the project is to capture the fugitive dust emissions, carbon sequestration and to attenuate the noise generated, in addition to reduce the visual impacts. A wide range of indigenous plant species should be planted as given in the **appendix** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
14. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
15. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
16. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.
17. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
18. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
19. The PP shall use drone video to cover the cluster area showing clearly the extent of operation and the surrounding environment and submit the video as part of EIA report.


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20. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting the penal provisions as given in the Environment (Protection) Act, 1986.

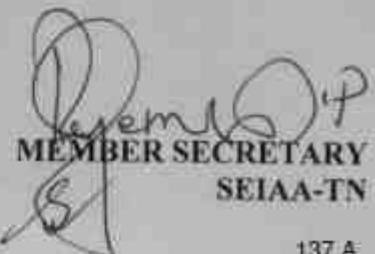
Appendix

List of Native Trees for Planting

1. Aegle marmelos – Vilvam
2. Adenaanthera pavonina - Manjadi
3. Albizia lebbeck – Vaagai
4. Albizia amara - Usil
5. Bauhinia purpurea - Mantharai
6. Bauhinia racemosa - Aathi
7. Bauhinia tomentosa – Iruvathi
8. Buchanania aillaris - Kattuma
9. Borassus flabellifer - Panai
10. Butea monosperma - Murukka maram
11. Bobax ceiba – Ilavu, Sevvilavu
12. Calophyllum inophyllum - Punnai
13. Cassia fistula - Sarakondrai
14. Cassia roxburghii- Sengondrai
15. Chloroxylon sweitenia - Purasa maram
16. Cochlospermum religiosum – Kongu, Manjal Ilavu
17. Cordia dichotoma – Mookuchali maram
18. Creteva adansonii – Mavalingum
19. Dillenia indica – Uva, Uzha
20. Dillenia pentagyna – Siru Uva, Sitruzha
21. Diospyros ebenum - Karungali
22. Diospyros chloroxylon – Vaganai
23. Ficus amplissima – Kal Itchi
24. Hibiscus tiliaceous – Aatru poovarasu
25. Hardwickia binata – Aacha
26. Holoptelia integrifolia - Aayili


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27. *Lanea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* - Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* - Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* - Nuna
37. *Morinda citrifolia* - Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* - Pungam
40. *Premna mollissima* - Munnai
41. *Premna serratifolia* - Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* - Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* - Puthranjivi
48. *Salvadora persica* - Uгаа Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca
51. *Sireblus asper* - Piraya maram
52. *Strychnos nuxvomica* - Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica* - Thandri
56. *Terminalia arjuna* - Ven marudhu
57. *Toona ciliate* - Sandhana vembu
58. *Thespesia populnea* - Puvarasu
59. *Walsura trifoliata* - valsura


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60. Wrightia tinctoria - Vep

Discussion by SEIAA and the Remarks:-

The subject was placed in the 496th Authority meeting held on 24.03.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

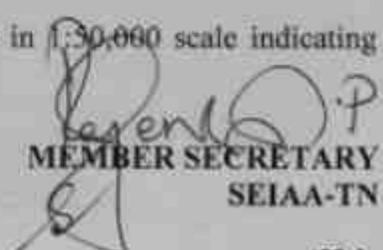
1. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
2. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
3. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
4. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
5. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
7. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
8. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
9. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
10. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.


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11. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
12. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
13. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
14. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
15. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
16. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
17. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.

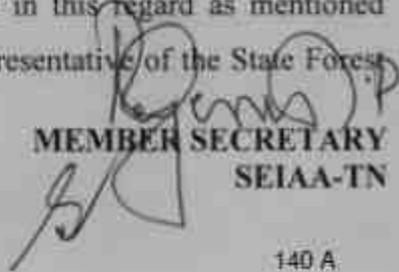
A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating


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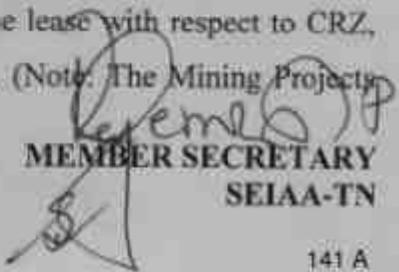
geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.

- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest


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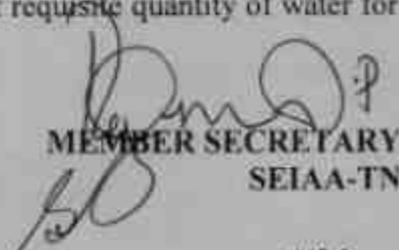
Department to assist the Expert Appraisal Committees.

- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects

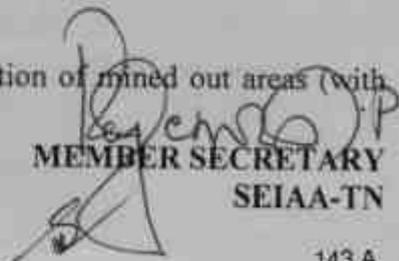

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falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

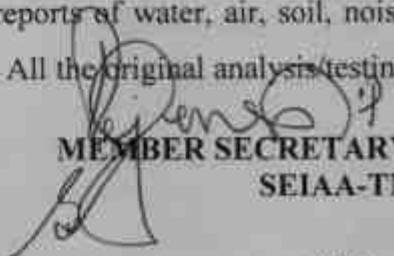

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- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with


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plans and with adequate number of sections) should be given in the EIA report.

- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing

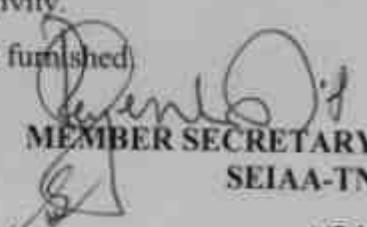

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- reports should be available during appraisal of the Project.
- e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

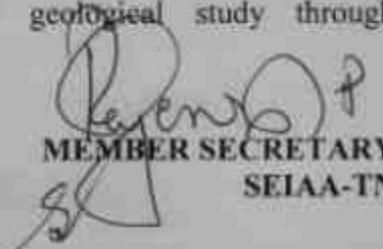
In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.


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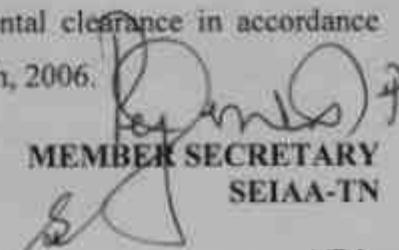
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.


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27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.


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- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Viruthunagar District.
7. Stock File.



THIRU.DEEPAK S.BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY TAMILNADU

3rd Floor, PanagalMaaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No. SEIAA-TN/E.No.9196/SEAC/ToR-1224/2022 Dated:18.08.2022

To

M.Viswanathan
S/o. MyilsamyGounder
West Thottam, Karachery
Chettipalayam Via
Coimbatore District- 641 201.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone quarry lease over an extent of 1.00.5 Ha at S.F.Nos360/1A5 & 360/1A6, Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District- Tamil Nadu by Thiru. M.Viswanathan- under project category – “B1” and Schedule S.No. 1(ii) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/76094/2022, Dt. 23.04.2022
 2. Your application submitted for Terms of Reference dated: 26.04.2022
 3. Minutes of the 295th Meeting of SEAC held on 15.07.2022
 4. Minutes of the 540th meeting of Authority held on 18.08.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.


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The proponent, Thiru. M.Viswanathan has submitted application seeking - ToR, for B1 category in Form-I, Pre- Feasibility report for the Rough Stone quarry lease over an extent of 1.00.5 Ha at S.F.Nos360/1A5 & 360/1A6, Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone quarry lease over an extent of 1.00.5 Ha at S.F.Nos360/1A5 & 360/1A6, Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District Tamil Nadu by Thiru. M.Viswanathan for Terms of Reference.

(SIA/TN/MIN/76094/2022 Dt. 23.4.2022)

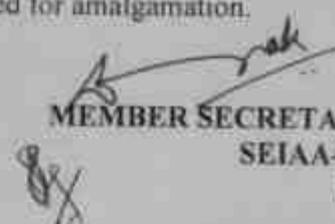
The proposal was placed in this 295th meeting of SEAC held on 15.7.2022. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

The SEAC noted the following

- 1) The Project Proponent, Thiru. M.Viswanathan has applied for Terms of Reference for the proposed Rough Stone quarry lease over an extent of 1.00.5 Ha at S.F.Nos 360/1A5 & 360/1A6, Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District Tamil Nadu.
- 2) The proposed quarry/activity is covered under Category "B1" of Item I(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
- 3) As per the mining plan the lease period is 5 years. The mining plan is for the period of five years & production should not exceed 55284 cu.m of rough stone. The annual peak production is 11784 cu.m of rough stone (1st year). The ultimate depth is 41m BGL.

Based on the presentation made by the proponent SEAC recommended grant of Terms of Reference (TOR) with Public Hearing, subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The PP shall furnish the certified compliance report obtained from MoEF&CC on existing EC issued.
2. The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
3. To study existence of any horizontal fissures and the need for amalgamation.


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4. Permanent structures (belonging to the PP/not belonging to the PP, Type/Age of construction, presence of inhabitants & distance) located within 500 m from the vicinity of the proposed site shall be surveyed & the same shall be enumerated and mitigation measures for these structures from the dust pollution, blast-induced ground vibration/noise, fly rock shall be accordingly detailed in EIA report.
5. The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.
6. In the case of proposed lease in an existing (or old) quarry where the benches are nonexistent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the 'highwall' benches to ensure slope stability in the proposed quarry lease indicating the influence of horizontal fractures observed during the geological study, which shall be vetted by the concerned Asst. Director of Geology and Mining, during the time of appraisal for obtaining the EC.
7. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry indicating the proposed stabilizing measures during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
8. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
9. As the habitations are situated at a distance of 470 m, the PP shall present a conceptual design for carrying out the NONEL initiation based controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled within the permissible limits as stipulated by the DGMS as well as no fly rock travel beyond 20 m from the blast site.
10. Since the quarry lies in a cluster situation, the PP shall furnish a Standard Operating Procedure for carrying out the safe blasting operation while considering the adjacent quarries lies in a radial distance of 500 m from their quarry.
11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.

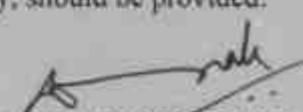

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12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
- What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
13. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
14. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
15. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
16. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
17. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.


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18. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
19. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
20. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
21. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
22. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
23. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
24. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
25. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.


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26. Impact on local transport infrastructure due to the Project should be indicated.
27. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
28. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
29. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
30. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
31. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
32. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
33. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
34. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
35. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.


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36. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
37. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
38. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
39. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
40. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
41. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
42. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
43. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
44. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.


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Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	விவம்
2	<i>Adenanthera pavonina</i>	Manjadi	மஞ்சரி ஆனந்தகுமரீயன்
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Uzai	உசை
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	அதி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவாதி
8	<i>Buchanania axillaris</i>	Kathuna	காதுனா
9	<i>Borassus flabellifer</i>	Parai	பரை
10	<i>Butea monosperma</i>	Murukkamarai	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Purnai	புரை
13	<i>Cassia fistula</i>	Sarakondrai	சரகண்டரை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கண்டரை
15	<i>Chloroxylon swietenia</i>	Purasamaram	புரசாமரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கொங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நடுவூதி
18	<i>Creteva adansonii</i>	Mavainguni	மாவைங்குனி
19	<i>Dillenia indica</i>	Ura, Uzha	உரா
20	<i>Dillenia pentagyna</i>	SeruUva, Sitruzha	சீறு உரா
21	<i>Diospyro ebenum</i>	Karungali	கரங்கலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகை
23	<i>Ficus anlytissima</i>	Kallichi	கல் இசி
24	<i>Hibiscus tiliacou</i>	Aatrupoovarasi	ஆத்ரபூவரசி
25	<i>Hardwickia binata</i>	Aacha	ஆச்சி
26	<i>Hotoptelia integrifolia</i>	Aayili	ஆயிலி, ஆயில்
27	<i>Lannea coromandelica</i>	Odhani	ஒடணி
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கெட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	வில்லி மரம்
31	<i>Litsea glutinosa</i>	Puinpattai	புழைபட்டை
32	<i>Madruca longifolia</i>	Iluppai	இலுப்பை
33	<i>Marsikara hexandra</i>	UlaakuPaalai	உலாகுபாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitrasyria parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுனா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுனா
38	<i>Phoenix sylvestris</i>	Eachai	ஏச்சை
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்


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40	<i>Prenna mollissima</i>	Munrai	முனை
41	<i>Prenna serratifolia</i>	Narumunnai	நடு முனை
42	<i>Prenna tomentosa</i>	Malampoovarasu	மலை முனா
43	<i>Prosopis cinerica</i>	Varu maram	வரன் மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேளா
45	<i>Pterospermum caesecens</i>	Vennangu, Tada	வேளாண்டி
46	<i>Pterospermum xylocarpum</i>	Polavu	புலா
47	<i>Putterlickia roxburghii</i>	Karpala	கர்பலா
48	<i>Salvadora persica</i>	Ugaa Maram	உகா மரம்
49	<i>Sapindus emarginatus</i>	Manupungari, Soapukai	மணிப்புகள் சோபுகை
50	<i>Saraca asoca</i>	Asoca	அசோகா
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	யெட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தாங் கோட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandi	தாண்டி
56	<i>Terminalia arjuna</i>	Ven marudhu	வேன் மருது
57	<i>Toona ciliata</i>	Sandihara vembu	சந்திஹா வேம்பு
58	<i>Theopesia populnea</i>	Pavaratu	புவரது
59	<i>Walsuratrifoliata</i>	valsura	வால்சுரா
60	<i>Wrightia tinctoria</i>	Veppalai	வேப்பலா
61	<i>Pithocellobium dulce</i>	Kodukkappali	கொடுக்கப்பலி

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 540th Authority meeting held on 17.08.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

- 1) Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
- 2) As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.


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- 3) The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
- 4) The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
- 5) Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
- 6) The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
- 7) The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
- 8) The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
- 9) The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
- 10) The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
- 11) The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
- 12) The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
- 13) The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
- 14) The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
- 15) The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
- 16) The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.


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- 17) The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
- 18) The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
- 19) Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & bio-diversity.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.
- 20) Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
- 21) To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
- 22) To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.


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- 23) Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
- 24) Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of


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reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked


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- out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
 - 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
 - 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
 - 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
 - 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be


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shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

- 22) One season (non-monsoon) [i.e. March-May (Summer Season), October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers


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- present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
 - 30) Information on site elevation, working depth, groundwater table etc: Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
 - 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
 - 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
 - 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
 - 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
 - 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
 - 36) Public health implications of the Project and related activities for the population in the impact


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- zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
 - 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
 - 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
 - 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
 - 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
 - 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
 - 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
 - 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for


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the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth


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- of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
 11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
 12. The EIA study report shall include the surrounding mining activity, if any.
 13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
 14. A study on the geological resources available shall be carried out and reported.
 15. A specific study on agriculture & livelihood shall be carried out and reported.
 16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
 17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
 18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
 19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
 20. Likely impact of the project on air, water, land, flora-fauna and nearby population
 21. Emergency preparedness plan in case of natural or in plant emergencies
 22. Issues raised during public hearing (if applicable) and response given
 23. CER plan with proposed expenditure.
 24. Occupational Health Measures
 25. Post project monitoring plan
 26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
 27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
 28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.


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29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide G.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.


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- The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-1A-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF& CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. Stock File.



THIRU. DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9107/SEAC/ToR-1296/2022 Dated: 27.10.2022

To

Thiru. V. Somasundaram,
S/o.Velusamy,
No.7/73, Karachery,
Arasampalayam Village,
Kinathukadavu Taluk,
Coimbatore District - 641 201.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone & Gravel quarry lease over an extent of 1.43.0 Ha at S.F.No. 360/IB(P), 360/1E(P) & 360/1G of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru.V.Somasundaram - under project category – “B1” and Schedule S.No.1(a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

Ref: 1. Online proposal No.SIA/TN/MIN/73834/2022, dated 18.03.2022.
2. Your application submitted for Terms of Reference dated: 21.03.2022.
3. Minutes of the 274th SEAC meeting held on 19.05.2022.
4. Reply letter submitted by proponent on: 14.07.2022.
5. Minutes of the 318th SEAC meeting held on 12.10.2022.
6. Minutes of the 563rd SEIAA meeting held on 27.10.2022.


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Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

The proponent, Thiru. V. Somasundaram has submitted application for Terms of Reference (ToR) on 21.03.2022, in Form-I, Pre- Feasibility report for the Proposed Rough Stone & Gravel quarry lease over an extent of 1.43.0 Ha at S.F.No. 360/1B(P), 360/1E(P) & 360/1G of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & gravel quarry lease over an extent of 1.43.0 Ha S.F.No.360/1B (P), 360/1E, 360/1G Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru V. Somasundaram- For Terms of Reference

The proposal was placed in 274th SEAC meeting held on 19.3.2022. The project proponent has given a detailed presentation. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The project proponent gave detailed presentation. SEAC noted the following:

1. The Project Proponent, Thiru V. Somasundaram has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 1.43.0 Ha S.F.No.360/1B (P), 360/1E, 360/1G Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan, the lease period is for 5 years. The production as per mining plan for 5 years not to exceed -48923 m³ of Rough Stone and 1350 m³ of Gravel. The Annual peak production as per mining plan is 10345m³ of Rough Stone (5th year) and 1350m³ of Gravel (1st year) with ultimate depth of 32m.

SEAC decided that the PP shall furnish certified compliance report of the existing Environmental Clearance issued from MoEF&CC/TNPCB. On the receipt of the same further deliberation will be done.

The project proponent submitted the details and the proposal was placed in this 318th Meeting of SEAC held on 07.10.2022. Based on the presentation made by the proponent, **SEAC recommended grant of Terms of Reference (TOR) with Public Hearing** subject to the following TORs, in


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addition to the standard terms of reference for combined EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The project proponent shall provide solar lighting system to the nearby villages before submitting EIA report as committed in earlier EC compliance report.
2. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying before submitting EIA report as committed in earlier EC compliance report.
3. The PP shall provide the impact of the proposed quarrying activity on the lake and other surrounding water bodies which are existing within 1 km radius from the mining lease area shall be furnished.
4. The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., upto a radius of 25 km from the proposed site.
5. The PP shall provide conceptual design for carrying out the NONEL initiation based controlled blasting operation involving muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled within the permissible limits as stipulated by the DGMS as well as no fly rock travel beyond 30 m from the blast site.
6. In the case of proposed lease in an existing (or old) quarry where the benches are nonexistent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and furnish slope stability action plan approved by the concerned AD (Mines) for the planned working by maintaining appropriate benches incorporating the haul road with proper gradient as the depth of the proposed quarry is exceeding 30 m, during the time of appraisal for obtaining the EC.
7. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/ I Class mines manager appointed by the proponent.
8. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.


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9. Since the quarry lies in a cluster situation, the PP shall furnish a Standard Operating Procedure for carrying out the safe blasting operation while considering the adjacent quarries lies in a radial distance of 500 m from their quarry.
10. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
11. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year
 - d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
12. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
13. The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc..
14. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
15. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
16. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions


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of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.

17. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
18. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
19. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
20. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
21. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
22. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
23. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.


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24. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
25. Impact on local transport infrastructure due to the Project should be indicated.
26. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
27. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
28. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
29. The Public hearing advertisement shall be published in one major National daily and one most circulated Tamil daily.
30. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
33. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner


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34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project-specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.
44. As per the MoEF&CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP.


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Discussion by SEIAA and the Remarks:-

The proposal was placed in the 563rd meeting of the Authority held on 27.10.2022. The Authority noted that the subject was appraised in 318th SEAC meeting held on 12.10.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in '**Annexure B**' of this minute.

1. The impacts of mining on flora, fauna & soil microorganisms in the mining area shall be studied.
2. The PP shall furnish details of soil erosion management and soil conservation plan.
3. The impacts of mining on Agriculture and vegetation around the mining area shall be studied.
4. The impacts of mining on the water table in the proposed mining area shall be studied

Annexure 'B'

1. Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.


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7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & bio-diversity.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.
11. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
12. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.
13. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.
14. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
15. Impact on surrounding agricultural fields around the proposed mining Area.
16. Erosion Control measures.
17. Impact on soil flora & vegetation around the project site.
18. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.


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19. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
20. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
21. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
22. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
23. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
24. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
27. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
28. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
29. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
31. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
32. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.


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33. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
34. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
35. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
36. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
37. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
39. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
40. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
41. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there


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had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.

- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.


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- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered,


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endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors.


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There should be at least one monitoring station within 500 m of the mine lease in the predominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

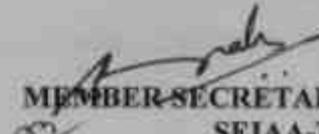
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted,


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- keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
 - 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
 - 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
 - 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
 - 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
 - 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
 - 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.


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- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - i) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the


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status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.


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15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies,
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals:
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.


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Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.

2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Coimbatore District.
7. Stock File.



**THIRU.DEEPAK S.BILGI, I.F.S.
MEMBER SECRETARY**

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU**
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr.No.SEIAA-TN/F.No.9243/SEAC/ToR-1239/2022 Dated : 29.08.2022

To

Thiru K.Ravikumar
S/o. R.Kumarasamy
No. 7/68, West Garden,
Karacheri, Periyakuyili Post,
Chettipalayam Via
Coimbatore District – 641 201

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough stone and Gravel Quarry lease over an extent of 1.40.0Ha in S.F.Nos. 355/2A(P), 355/2C(P) & 355/2D1A (P) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru K.Ravikumar - under project category – "B1" and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/76408 /2022, dated: 03.05.2022
 2. Your application seeking Terms of Reference submitted on: 12.05.2022
 3. Minutes of the 300th meeting of SEAC held on 04.08.2022
 4. Minutes of the 545th meeting of Authority held on 29.08.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.


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The project proponent, Thiru K.Ravikumar has submitted application seeking ToR for B1 category project in Form-I, for the Proposed Rough stone and Gravel Quarry lease over an extent of 1.40.0Ha in S.F.Nos. 355/2A(P), 355/2C(P) & 355/2D1A (P) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu and has furnished Pre-feasibility report.

Discussion by SEAC and the Remarks:-

Proposed Rough stone and Gravel Quarry lease over an extent of 1.40.0Ha in S.F.Nos. 355/2A(P), 355/2C(P) & 355/2D1A (P) of Arasampalayam Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu by Thiru K.Ravikumar- for Terms of Reference (SIA /TN /MIN/ 76408/2022 dated 03.05.2022)

The proposal was placed for appraisal in this 300th meeting of SEAC held on 04.08.2022. The details of the project furnished by the proponent are available on the PARIVESH web portal (parivesh.nic.in).

The Committee noted that,

1. The project/activity is covered under category "BI" of Item 1 (a) "Mining of Minerals Projects" of the schedule to the EIA Notification, 2006.

Based on the presentation made and documents submitted by the proponent, SEAC decided to **recommend grant of Terms of Reference (TOR) with Public Hearing** subject to the following TORs, in addition to the standard Terms of Reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The Project Proponent shall include the letter received from DFO concerned stating the proximity details of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., upto a radius of 25 km from the proposed site.
2. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the PP shall carry out the scientific studies to predict the slope stability of the proposed working benches and propose 'overall pit slope angle' of the quarry which ensures the angle of safety through an appropriate model by involving a reputed Research and Academic Institution such as NIRM, IIT-Chennai, NIT-Dept of Mining Engg., Surathkal, Anna University Chennai-CEG Campus, and any other CSIR Laboratories etc. A copy of such scientific study report shall be submitted to the SEIAA/SEAC as a part of Environmental Impact Assessment study.


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3. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidence.
4. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
5. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
6. The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,
7. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
8. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
9. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions


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- of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
10. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 11. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
 12. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of air pollution, water pollution, & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
 13. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
 14. Issues relating to Mine Safety, including slope geometry in case of Granite quarrying, blasting parameters etc. should be detailed. The proposed safeguard measures in each case should also be provided.
 15. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 16. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.


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17. Since non-saleable waste /OB / intermediate waste etc. is huge in the granite quarry, the Proponent shall provide the details pertaining to management of the above material with year wise utilization and average moving inventory be submitted.
18. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
19. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
20. Impact on local transport infrastructure due to the Project should be indicated.
21. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
22. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
23. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
24. The Public Hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
25. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
26. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
27. The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in


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consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.

28. Taller/one year old Saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted as per the advice of local forest authorities/ botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
29. A Disaster Management Plan shall be prepared and included in the EIA/EMP Report.
30. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.
31. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
32. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
33. The Socio-economic studies should be carried out within a 5 km-buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
34. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
35. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
36. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC


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conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.

37. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I

List of Native Trees Suggested for Planting

1. *Aeglemarmelos*-Vilvam
2. *Adenaantherapavonina*-Manjadi
3. *Albizialebeck*-Vaagai
4. *Albiziaamara*-Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa*-Iruvathi
8. *Buchananiaaillaris*-Kattuma
9. *Borassusflabellifer*- Panai
10. *Buteamonosperma* - Murukkamaram
11. *Bobaxceiba*- Ilavu, Sevvilavu
12. *Calophylluminophyllum* - Punnai
13. *Cassia fistula*- Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylonsweitenia* - Purasamaram
16. *Cochlospermumreligiosum*- Kongu, Manjallavu
17. *Cordiadichotoma*- Mookuchalimaram
18. *Cretevaadansonii*-Mavalingum
19. *Dilleniaindica*- Uva, Uzha
20. *Dilleniapentagyna*- SiruUva, Sitruzha
21. *Diospyrosebenum*- Karungali
22. *Diospyroschloroxylon*- Vaganai
23. *Ficusamplissima*- Kalltchi
24. *Hibiscus tiliaceous*-Aatrupoovarasu
25. *Hardwickiabinata*- Aacha
26. *Holopteliaintegrifolia*-Aayili
27. *Lanneacoromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthustetraphylla*- Neikottaimaram
30. *Limoniaacidissima* - Vila maram
31. *Litseaglutinosa*-Pisinpattai

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32. *Madhucalongifolia* - Illupai
33. *Manilkarahexandra*-UlakkaiPaalai
34. *Mimusopselengi* - Magizhamaram
35. *Mitragynaparvifolia* - Kadambu
36. *Morindapubescens*-Nuna
37. *Morindacitrifolia*- VellaiNuna
38. *Phoenix sylvestre*-Eachai
39. *Pongamiapinnata*-Pungam
40. *Premnamollissima*- Munnai
41. *Premnaserratifolia*- Narumunnai
42. *Premnatomentosa*-PurangaiNaari, PudangaNaari
43. *Prosopiscinerea* - Vannimaram
44. *Pterocarpusmarsupium* - Vengai
45. *Pterospermumcanescens*-Vennangu, Tada
46. *Pterospermumxylocarpum* - Polavu
47. *Puthranjivaroxburghii*-Puthranjivi
48. *Salvadorapersica* - UgaMaram
49. *Sapindusemarginatus*- Manipungan, Soapukai
50. *Saracaasoca* - Asoca
51. *Streblusasper*- Pirayamaram
52. *Strychnosnuxvomica*-Yetti
53. *Strychnopotatorum* - TherthangKottai
54. *Syzygiumcumini* - Naval
55. *Terminaliabellerica*- Thandri
56. *Terminalia arjuna*- Venmarudhu
57. *Toona ciliate* - Sandhanavembu
58. *Thespesiapopulnea*- Puvarasu
59. *Walsuratrifoliata*-valsura
60. *Wrightiatinctoria*- Vep

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 545th meeting of Authority held on 29.08.2022. The Authority noted that the proposal was placed in the 300th meeting of SEAC held on 04.08.2022. SEAC has furnished its recommendations to the Authority for granting Terms of Reference (ToR) along with Public Hearing for the project.

After detailed discussions, the Authority accepted the recommendation of SEAC and decided to **grant Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan.


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subject to the ToR as recommended by SEAC & subject specific standard ToR stipulated by MoEF& CC in addition to the following ToR:

1. Considering the environmental impacts due to mining, safety of the working personnel and following the principle of sustainable mining, the ultimate depth of mining is restricted to **40m below ground level is permitted for mining over a period of five years** as per the approved mining plan.
2. The scientific studies shall be carried out for any proposed quarry over the existing pit/quarry by the reputed Government Scientific Research / Academic Institutions such as Anna University, NITs, IITs, NIRM, CISR laboratories where the depth of the proposed working (or) ultimate depth of working is extended beyond 40 m below ground level (BGL) in case of flat terrain and the excavation extends beyond 30 m above ground level (AGL) in case of outcrops/hilly terrains for evaluating the stability of slopes. A copy of the report shall be submitted to the SEIAA, the concerned AD/DGM, the concerned DEE/TNPCB and the Director of Mines Safety, Chennai.
3. Detailed study shall be carried out regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
4. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological structures etc.
5. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
6. The Environmental Impact Assessment shall study in detail on the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
7. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
8. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
9. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the nearby water body and Reservoir.
10. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.


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11. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
12. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
13. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
14. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
15. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
16. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
17. The project proponent shall study and furnish the impact of project on plantations in adjoin patta lands, Horticulture, Agriculture and livestock.
18. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
19. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
20. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
21. The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic & micro plastic on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
22. The project proponent shall study on impact of mining on Reserve forests free ranging wildlife.
23. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & bio-diversity.
 - b) Climate change leading to Droughts, Floods etc.


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- c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.
24. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
25. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
26. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
27. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.


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- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land

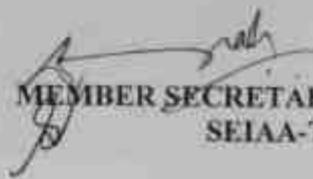

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- area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
 - 13) Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
 - 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
 - 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
 - 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
 - 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
 - 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing


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the same should be made as part of the project cost.

- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for


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- transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
 - 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
 - 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
 - 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
 - 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
 - 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
 - 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
 - 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis


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- on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
 - 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
 - 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
 - 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
 - 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
 - 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
 - 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
 - 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
 - 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
 - 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards


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implementation of EMP should be clearly spelt out.

- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii)


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sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km


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- other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
 19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
 20. Likely impact of the project on air, water, land, flora-fauna and nearby population
 21. Emergency preparedness plan in case of natural or in plant emergencies
 22. Issues raised during public hearing (if applicable) and response given
 23. CER plan with proposed expenditure.
 24. Occupational Health Measures
 25. Post project monitoring plan
 26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
 27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
 28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
 29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
 30. Reserve funds should be earmarked for proper closure plan.
 31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.


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- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J-11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.

5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC,
Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. Mail copy to Regional Office MoEF&CC, Chennai
8. Stock File.





Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), Tamil Nadu)

To,

The Proprietrix
TMT R BABY PACHAPALAYAM
Pachapalayam Village -641045

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/60707/2021 dated 10 May 2022. The particulars of the environmental clearance granted to the project are as below.

- | | |
|--|--|
| 1. EC Identification No. | EC22B001TN137747 |
| 2. File No. | 8362 |
| 3. Project Type | New |
| 4. Category | B1 |
| 5. Project/Activity Including Schedule No. | 1(a) Mining of minerals |
| 6. Name of Project | Tmt. R. Baby over an Extent of 1.33.0 ha in S.F. No. 83/1C1B, 83/1C2, Pachapalayam Village, Sulur Taluk, Coimbatore District |
| 7. Name of Company/Organization | TMT R BABY PACHAPALAYAM |
| 8. Location of Project | Tamil Nadu |
| 9. TOR Date | 01 Jan 1900 |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 16/09/2022

(e-signed)
Thiru.Deepak S.Bilgi
Member Secretary
SEIAA - (Tamil Nadu)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.

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THIRU.DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.8362/EC.No: 5249/2022 dated: 25.08.2022

Sir/Madam,

Sub SEIAA-TN – Proposed of Rough Stone & Gravel Quarry lease over an extent of 1.33.0 Ha in S.F.Nos.83/1C1B, 83/1C2 of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Tmt.R.Baby – Issue of Environmental Clearance – Regarding.

- Ref:**
1. ToR issued vide Lr. No. SEIAA-TN/F.No. 8362/SEAC/ToR-981/2021 Dated: 05.07.2021.
 2. Public Hearing conducted on 21.01.2022
 3. Online Proposal No. SIA/TN/MIN/60707/2021 dated 10.05.2022.
 4. Project proponent submitted EIA Report to SEIAA-TN on. 10.05.2022
 5. Minutes of the 299th meeting of SEAC held on 23.07.2022
 6. Minutes of the 544th meeting of SEIAA held on 25.08.2022

Details of Minor Mineral Activity:-

This has reference to your application third and fourth cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of minor minerals based on the particulars furnished in your application as shown below.

S.No	Particulars	Details furnished
1.	Name of the Owner/Firm	Tmt.R.Baby W/o.R.S.Radhakrishnan

		No.96/65G,Ruba Nagar Ramanathapuram, Coimbatore District-641045
2.	Type of quarrying	Rough stone & gravel
3.	S.F No. Of the quarry site with area break-up	83/1C1B, 83/1C2
4.	Village in which situated	Pachapalayam
5.	Taluk in which situated	Sulur
6.	District in which situated	Coimbatore
7.	Extent of quarry (in ha.)	1.33.0Ha
8.	Latitude & Longitude of all corners of the quarry site	10°52'42.28"N to 10°52'46.62"N 77°02'50.93"E to 77°02'56.53"E
9.	Topo Sheet No.	58- F/01
10.	Type of mining	Opencast Mechanized Mining
11.	Period of quarrying proposed	5 years
12.	Production (Quantity in m ³)	58,713m ³ of Rough stone & 2,430m ³ of Gravel
13.	Depth of quarrying	a. Section XY-AB - 37m (34m - Existing and 3m - Proposed) (till bench no.VIII) b. Section XY-CD - 37m (till bench no.VIII) c. Section XY-EF - 17m (till bench no. IV) d. Section X'Y'-AB - 37m (28m - Existing and 9m - Proposed) (till bench no. VIII) e. Section X'Y'-CD -37m (22m - Existing and 15m - Proposed) (till bench no. VIII)

		f. Section X'Y'-EF -22m (15m – Existing and 7m – Proposed) (till bench no. V)
14.	Depth of water table	55m-60m BGL
15.	Man Power requirement per day:	19 Nos.
16.	Water requirement: 1. Drinking & domestic purposes 2. Dust suppression 3. Green Belt	3.88 KLD 0.7 KLD 2.25 KLD 0.93 KLD
17.	Power requirement a. Domestic Purpose b. Industrial purposes	TNEB 300 Liters of HSD / day
18.	Precise area communication approved by the District Collector with date	Na. Ka. No.448/Kanimam/2019, dated: 16.11.2019
19.	Mining Plan approved by the Assistant Director (i/c)/ Joint Director, Department of Geology and Mining with date	Rc. No.448/Mines/2019, dated: 23.01.2020
20.	AD mines 500m cluster letter by the Assistant Director, Department of Geology and Mining with date	Rc. No.448/Mines/2019, dated: 05.12.2020
21.	VAO certificate regarding 300m radius cluster	Letter dated: 09.01.2020(VAO letter as in ToR application file Online No : 60707/2021)
22.	Project Cost (excluding EMP cost)	Rs. 43,50,600
23.	EMP cost	Capital cost : Rs. 11,05,000 Recurring cost : Rs. 18,50,800
24.	CER cost	5 lakhs (As per SEAC Minutes)
25.	TOR Issued	Lr.No.SEIAA-TN/F.No. 8362/SEAC/ToR-981/2021 Dated: 05.07.2021.

26.	Public Hearing	Public Hearing Conducted, dated: 21.01.2022
27.	EIA Report Received	EIA received on : 10.05.2022
28.	<p>Validity:</p> <p>This Environmental Clearance is granted for the production of 58,713m³ of Rough stone & 2,430m³ of Gravel for the period of 5 Years from the date of execution of the mining lease and depth is restricted as follows :</p> <p>a. Section XY-AB - 37m (34m – Existing and 3m – Proposed) (till bench no.VIII)</p> <p>b. Section XY-CD – 37m (till bench no.VIII)</p> <p>c. Section XY-EF – 17m (till bench no. IV)</p> <p>d. Section X'Y'-AB – 37m (28m – Existing and 9m – Proposed) (till bench no. VIII)</p> <p>e. Section X'Y'-CD – 37m (22m – Existing and 15m – Proposed) (till bench no. VIII)</p> <p>f. Section X'Y'-EF – 22m (15m – Existing and 7m – Proposed) (till bench no. V).</p>	

The Proponent has furnished affidavit in stamp paper attested by the Notary stating that

I, **Tmt.R.Baby, W/o.R.S.Radhakrishnan, residing at No.96/65G, Ruba Nagar, Ramanathapuram, Coimbatore District, Tamil Nadu State – 641 201,** solemnly declare and sincerely affirm that:

I have apply for getting Environment Clearance to SEIAA, Tamil Nadu State for quarry lease for quarrying of **Rough stone and Gravel Quarry** over an extent **1.33.0 ha** of Patta lands in **S.F.Nos.83/1C1B & 83/1C2** of **Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu State.**

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.
 - a. Protected areas notified under the wild life (Protection) Act, 1972,
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
 - c. Eco-Sensitive areas as notified,
 - d. Interstate boundaries within 10km radius from the boundary of the proposed site.

2. I will complete the following Corporate Environment Responsibility (CER) Cost of Rs.5 lakhs amount shall be spent to the Nearest Government Higher Secondary School.

S. No.	CER Activity	CER Cost INR
1.	Renovation/ Reconstruction of Existing Toilet	Rs.5,00,000/-
2.	Providing Environment related books	
3.	Plantation along the School Boundary @ 250 Nos Trees	
4.	Providing Electrical material and painting work for 12 th classrooms	

3. The total area of following quarries located within 500m radius from the periphery of my quarry site details as shown below:

Proposed Quarry

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Remarks
1.	Tmt.R.Baby	Pachapalayam 83/1C1B & 83/1C2	1.33.0	Subjected area Precise area communicated
2.	K.Nataraj	Arasampalayam 84/5A	1.48.0	Precise area communicated
3.	R.Nataraj	Pachapalayam 90/2 & 91/1A	1.34.5	Precise area communicated
4.	K.M.Subramaniam	Pachapalayam 94/1A, 9A & 10A	1.45.0	Precise area communicated
5.	M.Ramasamy	Pachapalayam 80/1E1, 1E2 & 1E4	1.37.0	Precise area communicated
6.	C.Palanisamy	Pachapalayam 82/2A (P) & 2B	1.95.5	Application processed
7.	M.Sivasamy	Arasampalayam 360/1A4, 1A5, 1A6 & 357	2.49.5	Application processed

Existing Quarry

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	V.Mohandas	Pachapalayam 82/3 & 80/1C1	3.24.5	07.03.2017 to 06.03.2022	-
2.	R.Chinnasamy	Pachapalayam 83/1A (P) & 2 (P)	1.73.0	13.04.2018 to 12.04.2023	-
3.	S.Arunachalam	Pachapalayam 83/1C1A	1.33.0	13.04.2018 to 12.04.2023	-
4.	C.Maragatham	Pachapalayam 92/3, 4, 93/1A, 1B, 2A, 110/3 & 4	5.98.0	17.09.2016 to 16.09.2021	-
5.	M.Sundarraaj	Pachapalayam 92/1	1.14.5	17.09.2016 to 16.09.2021	-
6.	T.Pushparaj	Pachapalayam 90/4, 90/1D, 90/1C & 90/2D	1.14.5	17.09.2016 to 16.09.2021	-
7.	KNR Constructions	Pachapalayam 89/1 & 89/2 (P)	1.28.8	01.08.2017 to 31.07.2022	-
8.	G.Loganathan	Pachapalayam 89/2 (P)	1.54.0	23.09.2016 to 22.09.2021	-
9.	S.Kalaimuthu	Arasampalayam 364	3.85.5	17.09.2016 to 16.09.2021	-
10.	M.Rasamani	Arasampalayam 361/1A & 362/1	0.99.0	01.06.2016 to 31.05.2021	-
11.	K.Ravikumar	Arasampalayam 355/2A (P), 2C (P) & 2D1 (P)	1.93.5	02.06.2016 to 01.06.2021	-
12.	V.Somasundaram	Arasampalayam 360/1B (P) & 1G (P)	0.90.0	17.09.2016 to 16.09.2021	-

Expired Quarry

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	S.Rajan	Arasampalayam 354/2B	2.20.0	08.10.2010 to 07.10.2015	-
2.	A.Kandasamy Gounder	Arasampalayam 349/3B	0.44.0	09.09.2009 to 08.09.2014	-
3.	S.A.Jappar and M.Arunachalam	Pachapalayam 92/2 & 110/2	1.56.0	09.05.2011 to 08.05.2016	-
4.	R.Krishnasamy	Pachapalayam 91/1B2, 1B3, 1C, 2A & 2B	0.99.0	17.03.2003 to 16.03.2008	-

Abandoned Quarry

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
Nil					

Future Proposed Quarry

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
Nil					

4. There will not be hindrance or disturbance to the people living during quarrying activities and transportation of the mineral.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition. The same will be maintained and utilized for Transportation of quarry materials and machineries.


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9. I will not engage any child labor in my quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.

Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from Assistant Director, Department of Geology & Mining, Coimbatore District in his letter Rc. No.448/Mines/2019, dated: 05.12.2020 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

i) Existing Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	V.Mohandas	Pachapalayam 82/3 & 80/1C1	3.24.5	07.03.2017 to 06.03.2022	-
2.	R.Chinnasamy	Pachapalayam 83/1A (P) & 2 (P)	1.73.0	13.04.2018 to 12.04.2023	-
3.	S.Arunachalam	Pachapalayam 83/1C1A	1.33.0	13.04.2018 to 12.04.2023	-
4.	C.Maragatham	Pachapalayam 92/3, 4, 93/1A, 1B, 2A, 110/3 & 4	5.98.0	17.09.2016 to 16.09.2021	-
5.	M.Sundarraaj	Pachapalayam 92/1	1.14.5	17.09.2016 to 16.09.2021	-
6.	T.Pushparaj	Pachapalayam 90/4, 90/1D, 90/1C & 90/2D	1.14.5	17.09.2016 to 16.09.2021	-

7.	KNR Constructions	Pachapalayam 89/1 & 89/2 (P)	1.28.8	01.08.2017 to 31.07.2022	-
8.	G.Loganathan	Pachapalayam 89/2 (P)	1.54.0	23.09.2016 to 22.09.2021	-
9.	S.Kalaimuthu	Arasampalayam 364	3.85.5	17.09.2016 to 16.09.2021	-
10.	M.Rasamani	Arasampalayam 361/1A & 362/1	0.99.0	01.06.2016 to 31.05.2021	-
11.	K.Ravikumar	Arasampalayam 355/2A (P), 2C (P) & 2D1 (P)	1.93.5	02.06.2016 to 01.06.2021	-
12.	V.Somasundaram	Arasampalayam 360/1B (P) & 1G (P)	0.90.0	17.09.2016 to 16.09.2021	-

ii) Expired Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	S.Rajan	Arasampalayam 354/2B	2.20.0	08.10.2010 to 07.10.2015	-
2.	A.Kandasamy Gounder	Arasampalayam 349/3B	0.44.0	09.09.2009 to 08.09.2014	-
3.	S.A.Jappar and M.Arunachalam	Pachapalayam 92/2 & 110/2	1.56.0	09.05.2011 to 08.05.2016	-
4.	R.Krishnasamy	Pachapalayam 91/1B2, 1B3, 1C, 2A & 2B	0.99.0	17.03.2003 to 16.03.2008	-

iii) Abandoned Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
Nil					

iv) Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Remarks
1.	Tmt.R.Baby	Pachapalayam 83/1C1B & 83/1C2	1.33.0	Subjected area Precise area communicated
2.	K.Nataraj	Arasampalayam 84/5A	1.48.0	Precise area communicated
3.	R.Nataraj	Pachapalayam 90/2 & 91/1A	1.34.5	Precise area communicated
4.	K.M.Subramaniam	Pachapalayam 94/1A, 9A & 10A	1.45.0	Precise area communicated
5.	M.Ramasamy	Pachapalayam 80/1E1, 1E2 & 1E4	1.37.0	Precise area communicated
6.	C.Palanisamy	Pachapalayam 82/2A (P) & 2B	1.95.5	Application processed
7.	M.Sivasamy	Arasampalayam 360/1A4, 1A5, 1A6 & 357	2.49.5	Application processed

v) Future Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
Nil					

Appraisal by SEAC:-

Proposed Rough Stone & Gravel Quarry lease over an extent of 1.33.0Ha in S.F.Nos.83/1C1B, 83/1C2 of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Tmt.R.Baby - For Environmental Clearance.

The proposal was placed for appraisal in the 299th meeting of SEAC held on 23.07.2022. The details of the project furnished by the proponent are given on the website (parivesh.nic.in).

The SEAC noted the following:

1. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006, since the total area in the cluster exceeds 5 ha.
2. Earlier ToR was issued by SEIAA-TN vide Lr. No. SEIAA-TN/F.No.8362/SEAC/ToR-981/2021 dated: 05.07.2021 restricting the depth to 42m.
3. Public Hearing was conducted on 21.01.2022
4. Project proponent EIA report submitted to SEIAA-TN on 10.06.2022.

Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Environmental Clearance for the production 68288cu.m of Rough stone & 2430cu.m of Gravel for an ultimate depth of 42m, subject to the standard conditions as per the **Annexure I** of this minutes & normal conditions stipulated by MOEF &CC, in addition to the following specific conditions:

1. The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of thirty years, whichever is earlier, vide MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.
2. Tree plantation & fencing around the mine lease area shall be completed before starting the production.
3. The mine manager and other statutory competent persons such as blaster (or) mine mate shall be appointed before the commencement of mining operation as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations (MMR), 1961. The PP shall send the Notice of Opening of the proposed quarry to the Regional Inspector of Mines/Director of Mines, Chennai Region as per MMR, 1961 before obtaining the CTO from TNPCB.
4. The PP shall furnish a conceptual slope stability action plan to the AD/Mines-DGM, for the planned working by providing a suitable accessible haul road through proper gradient as per the provisions laid in the MMR 1961 with keeping the benches intact, as the depth of the proposed quarry is exceeding 40 m, before obtaining CTO from TNPCB.


MEMBER SECRETARY
SEIAA-TN

5. However, the PP shall carry out the scientific studies to assess the slope stability of the benches and quarry wall when the depth of the working touches 40 m (or) in the fourth year of operation, by involving a reputed Research and Academic Institution such as NIRM, IIT Madras, NITK Surathkal – Dept of Mining Engg, Anna University Chennai-CEG Campus, and any other CSIR Laboratories etc. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance.
6. Since habitations are located at a distance range of 300-500 m, the PP shall use only the jack hammer drilled shallow holes (32-34 mm dia & 1.5 m length) with a device for collection of dust from drilling (dust extractor facility) to ensure the environmentally acceptable drilling operations.
7. The PP shall prepare a Standard Operating Procedure (SOP) indicating the timing of the blasting, safety measures, etc. in consultation with the owners/PPs of the other quarries located within the vicinity of this cluster project for carrying out the blasting operation smoothly, without affecting the legislative requirements of MMR 1961 & related DGMS Circulars.
8. The PP shall ensure that only controlled blasting operation involving NONEL initiation system and muffle blasting shall be carried out in the quarry such that the blast-induced ground vibration level (Peak Particle Velocity) measured in the houses/structures located at a distance of 330 m shall not exceed 2.0 mm/s and no fly rock travel beyond 20 m from the blast site.
9. The PP shall ensure that the blasting time is communicated to all the concerned residents around a radial distance of 500 m from the blast site and necessary sentries shall be provided such that no person/fauna is present in the danger zone.
10. The PP shall also explore the possibility of carrying out the 'Amalgamation' of the other adjacent quarries through the relevant 'Modified Mining Plan' approved by the competent authority, with prior permission from the **Regional Inspector of Mines/Director of Mines, Chennai Region** for preparing a suitable 'Progressive Mine Closure Plan' towards safe environment.
11. The PP shall prepare a Standard Operating Procedure (SOP) indicating the travelling route, safety measures, etc. in consultation with the owners/PPs of the other quarries located within the vicinity of this cluster project for carrying out the transportation operation

smoothly, without affecting the legislative requirements of MMR 1961 & related DGMS Circulars.

12. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project proponent shall ensure that the road is not damaged due to transportation of the quarried earth; and transport of the material will be carried out in accordance with the IRC Guidelines in order to comply with traffic congestion and density.
13. As per the MoEF& CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall adhere EMP furnished.
14. As accepted by the Project proponent the CER cost is Rs. 5 lakhs and the amount shall be spent as committed, before obtaining CTO from TNPCB.

ANNEXURE - I

1. The proponent shall mandatorily appoint the required number of statutory officials and the competent persons in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations, 1961.
2. The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit before the commencement of the operation and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
3. Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required in connection with the concerned Govt. Authority.
4. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form of Short Term Permit (STP), Query license or any other name.
5. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle


MEMBER SECRETARY
SEIAA TN

of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.

6. The proponent shall ensure that the slope of dumps is suitably vegetated in scientific manner with the native species to maintain the slope stability, prevent erosion and surface run off. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps.
7. Perennial sprinkling arrangement shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.
8. The Project Proponent shall carry out slope stability study by a reputed academic/research institution such as NIRM, IIT, Anna University for evaluating the safe slope angle if the proposed dump height is more than 30 meters. The slope stability report shall be submitted to concerned Regional office of MoEF&CC, Govt. of India, Chennai as well as SEIAA, Tamilnadu.
9. The Proponent shall ensure that the Noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction measures undertaken accordingly. The report on the periodic monitoring shall be submitted to TNPCB once in 6 months.
10. Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
11. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
12. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper escapements as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall

earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.

13. **Noise and Vibration Related:** (i) The Proponent shall carry out only the Controlled Blasting operation using NONEL shock tube initiation system during daytime. Usage of other initiation systems such as detonating cord/fuse, safety fuse, ordinary detonators, cord relays, should be avoided in the blasting operation. The mitigation measures for control of ground vibrations and to arrest fly rocks should be implemented meticulously under the supervision of statutory competent persons possessing the I / II Class Mines Manager / Foreman / Blaster certificate issued by the DGMS under MMR 1961, appointed in the quarry. No secondary blasting of boulders shall be carried out in any occasions and only the Rock Breakers (or) other suitable non-explosive techniques shall be adopted if such secondary breakage is required. The Project Proponent shall provide required number of the security sentries for guarding the danger zone of 500 m radius from the site of blasting to ensure that no human/animal is present within this danger zone and also no person is allowed to enter into (or) stay in the danger zone during the blasting. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.
14. Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
15. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management" and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.
16. The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
17. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the

quarried rough stones; and transport of rough stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.

18. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
19. After mining operations are completed, the mine closure activities as indicated in the mine closure plan shall be strictly carried out by the Proponent fulfilling the necessary actions as assured in the Environmental Management Plan.
20. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.
21. The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
22. The project proponent shall ensure that the provisions of the MMRD, 1956, the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are complied by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
23. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB) and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.
24. The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
25. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
26. All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.

27. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
28. The Project proponent shall install a Display Board at the entrance of the mining lease area/abutting the public Road, about the project information as shown in the **Appendix –II** of this minute.

Appendix - I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Apple marmelos</i>	Vilvam	விவம்
2	<i>Adenanthera parviflora</i>	Marjadi	மரசாதி அனாந்தராஜாதி
3	<i>Albizia lebbok</i>	Vaagai	வாளை
4	<i>Albizia amara</i>	Uai	உ.ஈ
5	<i>Bauhinia purpurea</i>	Marthara	மர்தரா
6	<i>Eulalia racemosa</i>	Aathu	அ.ஊ
7	<i>Bauhinia tomentosa</i>	Iruvattu	இருவட்டி
8	<i>Buchanania axillaris</i>	Kattuma	க.ஊ
9	<i>Borassus flabellifer</i>	Parai	பாளை
10	<i>Butea monosperma</i>	Murakkamaram	முரக்கமரம்
11	<i>Besix ceda</i>	Ilavu, Sevilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Panna	பாளை
13	<i>Cassia fistula</i>	Sarakandrai	சாசகந்திரை
14	<i>Cassia roxburghii</i>	Sergondrai	செர்கண்டிரை
15	<i>Chloroxylon swietenia</i>	Purasamaram	புராசமரம்
16	<i>Cedrela odorata</i>	Kongu, Manjallavu	காங்கு, மஞ்சலவு காங்கு
17	<i>Cordia dichotoma</i>	Naruvu	நாருவு
18	<i>Crotalaria adansonii</i>	Maralungam	மராலுங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உ.ஈ
20	<i>Dillenia pentagyna</i>	SiruUva, Siruzha	சீருஉ.ஈ, சீருஊ
21	<i>Diospyros sebifera</i>	Karungali	காருங்கலி
22	<i>Diospyros schloroxylon</i>	Vaganai	வாளை
23	<i>Ficus amplissima</i>	Kallichu	க.ஊ
24	<i>Hibiscus tiliaceus</i>	Astrupooraram	அஸ்தூபூரம்
25	<i>Hardwickia binata</i>	Aacha	அ.ஊ
26	<i>Holoptelia integrifolia</i>	Aavili	அ.ஊ, அ.ஊ
27	<i>Larrea coronandilica</i>	Othiam	ஓ.ஊ
28	<i>Lagerstrœmia speciosa</i>	Poo Marudhu	பூ மரூது
29	<i>Lopanthus tetraphylla</i>	Netkottamaram	நெக்கோட்டமரம்
30	<i>Lumnaca acidissima</i>	Vila maram	வி.ஊ
31	<i>Litsea glutinosa</i>	Pizampattai	பி.ஊ
32	<i>Malluca longifolia</i>	Iluppu	இ.ஊ
33	<i>Muntingia calabura</i>	UlakkaPaalai	உ.ஊ
34	<i>Mimusops elena</i>	Magizhamaram	ம.ஊ
35	<i>Mitragyna parvifolia</i>	Kadambu	க.ஊ
36	<i>Morinda pubescens</i>	Nura	நூர்
37	<i>Morinda citrifolia</i>	Vellai Nura	வெ.ஊ
38	<i>Phoenix sylvestris</i>	Eachu	ஈ.ஊ
39	<i>Fongama pinnat</i>	Punjam	பு.ஊ

Project subject to the conditions stated therein. After detailed discussion, the Authority with reference to specific condition (I) of SEAC, SEIAA decided to grant Environmental Clearance as per the mine plan, for a period of 5 years approved by the Department of Geology & Mining subject to the conditions as recommended by SEAC in addition to the following conditions:

1. The depth is restricted as follows
 - a. Section XY-AB - 37m(34m – Existing and 3m – Proposed) (till bench no.VIII)
 - b. Section XY-CD – 37m (till bench no.VIII)
 - c. Section XY-EF – 17m (till bench no. IV)
 - d. Section X'Y'-AB – 37m (28m – Existing and 9m – Proposed) (till bench no. VIII)
 - e. Section X'Y'-CD –37m (22m – Existing and 15m – Proposed) (till bench no. VIII)
 - f. Section X'Y'-EF –22m (15m – Existing and 7m – Proposed) (till bench no. V)Hence, the quantity of Rough Stone is 58,713 m³ and 2,430m³ of Gravel.
2. The AD/DD, Dept. of Geology &Mining shall ensure operation of the proposed quarry after the submission slope stability study conducted through the reputed research & Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc.
3. The AD/DD, Dept. of Geology &Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
4. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone.
5. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity.
6. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
7. The activity should not result in CO₂ release and temperature rise and add to micro climate alternations.
8. The mining closure plan should be strictly adhered to with appropriate soil rehabilitation measures to ensure ecological stability of the area.

9. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is build-up, during the process of restoration.
10. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife.
11. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem.
12. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution, to water sources in the area.
13. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
14. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status.
15. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.
16. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
17. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms.
18. The proponent shall ensure that the activity does not result in invasion by invasive alien species.
19. Actions to be taken to promote agro forestry, mixed plants to support biodiversity conservation in the mine restoration effort.
20. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
21. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health
22. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.

23. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
24. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighbouring open wells and bore wells.
25. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels.
26. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) to be planted.
27. The proponent shall ensure that the activities do not disturb the resident and migratory birds.
28. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).
29. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.
30. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
31. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
32. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoin reserve forests and areas around.
33. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
34. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.
35. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.

Part-A: Conditions to be Complied before commencing mining operations: -

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.

12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.

- v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF&CC, GoI to control noise to the prescribed levels.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps:-
- i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
34. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
35. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Bunds to be provided at the boundary of the project site.
39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.
43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.

44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations; undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
57. All required sanitary and hygienic measures should be in place before starting construction activities and they have to be maintained throughout the construction phase.

58. The company shall stress upon the preventive aspects of occupational health.
59. A separate environment and safety management cell with qualified staff shall be set up before commissioning of construction activities and shall be retained throughout the lifetime of the industry, for implementation of the stipulated environmental safeguards.
60. A scientific site/ ecological rehabilitation and restoration plan on long term basis should be drawn to carryout restoration with native species and Bio diversity.
61. The Green/Blue plan should guide the restoration of the site. The rehabilitation/restoration plan should be submitted to SEIAA-TN within one month. If applicable.
62. The existing water bodies should not be disturbed to ensure sustainable environment for aquatic life forms.
63. The proponent should completely implement all environmental pollution control measures as detailed in the EIA report and in the additional report.
64. Avenue plantation wherever needed has to be carried out along the route for dust suppression.
65. The green belt developed for the prevention of dust pollution should not form a part of the larger green belt development envisaged in the EIA report.
66. Regular monitoring and check up for pulmonary and carcinogenic diseases to be carried out regularly, not only for the workers involved in the mines but also to the people in the villages adjoining the mines. Interaction with the Primary Health Centre & district medical officer should be on regular basis to monitor the incidence of the diseases if any and to provide suitable medical facility for the patients.
67. Monitoring of well water levels and water quality of the wells in the locations furnished in the EIA report shall be done during pre-monsoon and post monsoon period and results submitted to the Regional Office of MoEF, Chennai and SEIAA.
68. Monitoring of water quality and air quality in and around the project site in the selected monitoring points as mentioned in the EIA report shall be continued regularly involving Academic Institutions.
69. Hydro geological study including infiltration test shall be conducted by any reputed agency to estimate leachate quantity.
70. Regular medical check-up for mine workers and nearby residents around the project site involving community medical centre/NIMH shall be conducted.
71. As per norms, the health study should be conducted through competent/approved health organization and report submitted for one year.

72. The effective safe guard measures shall be provided to control particulate dust level in critical areas, transfer points and haul road within the mine area.
73. NOC from the State GWA for drawing ground water shall be obtained, if ground water table is intersected.
74. Green belt shall be provided as per norms of MoEF& CC, GOI, in consultation with local DFO.
75. All the recommendations made in the EIA report of the project shall be effectively implemented.
76. A booklet containing the Dos and Don'ts shall be prepared in vernacular languages for the use of the mine engineers/ managers and the workers to ensure that all necessary environmental, safety and health measures are undertaken.
77. All the environmental protection measures and safeguards as recommended in the EIA report shall be complied with.
78. Hydro geological study of the area shall be reviewed annually and report submitted to the Authority. No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the operation of the Mining activity.
79. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of a Senior Executive.
80. The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at Chennai, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO₂, NO_x or critical sector parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

Part B: General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.

3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.

15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.

23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai - 32.
7. The District Collector, Coimbatore District.
8. The Commissioner of Geology and Mines, Guindy, Chennai - 32.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.

Signature Not Verified
Digitally signed by Thiru. Deepak S. Bilgi
Member Secretary
Date: 9/16/2022 4:41:21 PM
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ENVIRONMENTAL
CLEARANCE

PARIVESH

(Pro-Active and Responsive Facilitation by Interactive,
and Virtuous Environmental Single-Window Hub)



Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), Tamil Nadu)

To,

The Owner
K NATARAJ RS QUARRY
Pachapalayam Village -641201

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/58147/2020 dated 07 May 2022. The particulars of the environmental clearance granted to the project are as below.

- | | |
|--|---|
| 1. EC Identification No. | EC22B001TN194670 |
| 2. File No. | 8043 |
| 3. Project Type | New |
| 4. Category | B1 |
| 5. Project/Activity Including Schedule No. | 1(a) Mining of minerals |
| 6. Name of Project | Thiru. K. Nataraj over an Extent of 1.48.0 ha in S.F. No. 84/5A(Part), Pachapalayam Village, Sulur Taluk, Coimbatore District |
| 7. Name of Company/Organization | K NATARAJ RS QUARRY |
| 8. Location of Project | Tamil Nadu |
| 9. TOR Date | 16 Mar 2021 |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 17/09/2022

(e-signed)
Thiru.Deepak S.Bilgi
Member Secretary
SEIAA - (Tamil Nadu)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH.Please quote identification number in all future correspondence.

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THIRU.DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.8043/EC.No: 5242/2022 dated: 25.08.2022

Sir/Madam,

Sub SEIAA-TN – Proposed Rough Stone & Gravel quarry lease over an extent of 1.48.0 Ha in S.F.Nos. 84/5A (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Thiru.K.Nataraj – issue of Environmental Clearance – Regarding.

- Ref:**
1. ToR issued vide Lr.No.SEIAA-TN/F.No. 8043/SEAC/ToR-915/2020 Dated: 16.03.2021.
 2. Public Hearing conducted on 21.01.2022
 3. Online Proposal No: SIA/TN/MIN/58147/2021 dated 07.05.2022.
 4. Project proponent submitted EIA Report to SEIAA-TN on. 07.05.2022
 5. Minutes of the 299th meeting of SEAC held on 23.07.2022
 6. Minutes of the 544th meeting of SEIAA held on 25.08.2022

Details of Minor Mineral Activity: -

This has reference to your application third and fourth cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of minor minerals based on the particulars furnished in your application as shown below.

S.No	Particulars	Details furnished
1.	Name of the Owner/Firm	Thiru.K.Nataraj S/o. Kuppasamy Gounder Theerthakinaru Thottam, Karacheri

		Chettipalayam via, Kinathukadavu Taluk Coimbatore District – 641 201
2.	Type of quarrying	Rough stone & gravel
3.	S.F No. Of the quarry site with area break-up	84/5A(Part)
4.	Village in which situated	Pachapalayam
5.	Taluk in which situated	Sulur
6.	District in which situated	Coimbatore
7.	Extent of quarry (in ha.)	1.48.0 Ha
8.	Latitude & Longitude of all corners of the quarry site	10°52'38.92"N to 10°52'45.65"N 77°02'44.32"E to 77°02'47.80"E
9.	Topo Sheet No.	58F/01
10.	Type of mining	Opencast Mechanized Mining
11.	Period of quarrying proposed	5 years
12.	Production (Quantity in m ³)	Rough stone- 59704 m ³ & Gravel-1950 m ³
13.	Depth of quarrying	28m (3m Gravel + 25m Rough Stone)
14.	Depth of water table	60m-65m
15.	Man Power requirement per day:	16 Employees
16.	Water requirement:	3.0KLD
	1. Drinking & domestic purposes	0.5KLD
	2. Dust suppression	1.0KLD
	3. Green Belt	1.5 KLD
17.	Power requirement	
	a. Domestic Purpose	TNEB
	a. Industrial purpose	300 Liters of HSD / day
18.	Precise area communication approved by the, District Collector, with date	Na.Ka.No.257/kanimam/2018, Dated: 09.09.2019.
19.	Mining Plan approved by the Assistant Director (i/c) / Joint Director of Geology and Mining with date	Rc. No. 257/Mines/2018, dated: 18.02.2020
20.	Deputy Director, Department of	Rc. No. 257/Mines/2018,

	Geology & Mining, 500m cluster letter	dated:06.08.2020
21.	VAO certificate regarding 300m radius cluster	Letter dated: 4.02.2020
22.	Project Cost (excluding EMP cost)	Rs:47,21,900
23.	EMP cost	Capital Cost - Rs.7.71 Lakhs Recurring Cost – Rs. 2.96 Lakhs
24.	CER cost	Rs. 5 Lakhs as per SEAC
25.	TOR Issued	Lr.No.SEIAA–TN/F.No. 8043/SEAC/ToR-915/2020 Dated: 16.03.2021.
26.	Public Hearing	Public Hearing Conducted, dated: 21.01.2022
27.	EIA Report Received	EIA received on:07.05.2022
28.	<u>Validity:</u> This Environmental Clearance is granted for the production of 59704 m ³ of rough stone and 1,950 m ³ of gravel for the period of 5 Years from the date of execution of the mining lease and ultimate depth of mining upto 28m BGL.	

The Proponent has furnished affidavit in stamp paper attested by the Notary stating that

I, **K. Nataraj,S/o. Kuppusamy Gounder,Theerthakinaru Thottam, Karacheri, Chettipalayam Via, Kinathukadavu,Coimbatore District,Tamilnadu State – 641 201,** solemnly declare and sincerely affirm that:

I have apply for getting Environment Clearance to Appropriate Authorities, Tamil Nadu for quarry lease for quarrying of **Rough stone and Gravel Quarry over an extent 1.48.0ha in S.F.No. 84/5A(Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu.**

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.
 - a. Protected areas notified under the wild life (Protection) Act, 1972,
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
 - c. Eco-Sensitive areas as notified,


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SEIAA, TN

		90/2D			
7.	M.Rasamani	Arasampalayam 361/1A & 362/1	0.99.0	01.06.2016 to 31.05.2021	-
8.	K.Ravikumar	Arasampalayam 355/2A (P), 2C (P) & 2D1 (P)	1.93.5	02.06.2016 to 01.06.2021	-
9.	V.Somasundaram	Arasampalayam 360/1B (P) & 1G (P)	0.90.0	17.09.2016 to 16.09.2021	-
10.	C.Ganesh	Arasampalayam 151/1E (P)	1.58.0	15.09.2016 to 14.09.2021	-

Abandoned Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	R. Sampathkumar	Pachapalayam 84/4C	0.46.5	10.06.2014 to 09.06.2018	-
2.	K.Aruchamy	Pachapalayam 85/2A, 85/1B	0.40.5	08.01.2006 to 07.01.2011	-
3.	K.Palanisamy	Pachapalayam 85/2A, 1C	0.40.5	11.06.2007 To 10.06.2012	-

Present Proposed Quarries

S.Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease period	Remarks
1.	K.Nataraj	Pachapalayam 84/5A	1.48.0	-	Subject Area
2.	R.Nataraj	Pachapalayam 90/2 & 91/1A	1.34.5	-	Precise area communicated 09.09.2019
3.	Tmt.R.Baby	Pachapalayam	1.33.0	-	Precise area


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		83/1C1B & 83/1C2			communicated on 16.11.2019
4.	K.M.Subramaniam	Pachapalayam 94/1A, 2A3, 8B, 9A, 10A	2.98.0	-	Lease applied

Expired Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
1.	A.Palanisamy	Panchapalayam 85/2B	1.87.5	24.11.2015 to 23.11.2019	--
2.	R.Krishnasamy	Pachapalayam 91/1B2, 1B3, 1C, 2A & 2B	0.99.0	17.03.2003 to 16.03.2008	-
3.	S.A.Jappan and M.Arunachalam	Pachapalayam 92/2 & 110/2	1.56.0	09.05.2011 to 08.05.2016	-
4.	C.Palanisamy	Pachapalayam 82/2A.(P), 2B	1.44.5	26.06.2015 to 25.06.2020	-
5.	S.Rajan	Arasampalayam 354/2B	2.20.0	08.10.2010 to 07.10.2015	-
6.	M. Sivasamuy	Arasampalayam 360/1A4, 360/1A5, 360/1A6	1.48.0	26.06.2015 to 25.06.2020	

Future Proposed Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent (in Hects)	Lease Period	Remarks
--- NIL ---					

4. There will not be hindrance or disturbance to the people living during quarrying activities and transportation of the mineral.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition. The same will be maintained and utilized for Transportation of quarry materials and machineries.
9. I will not engage any child labor in my quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.

Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from Deputy Director, Department of Geology & Mining, Coimbatore District in his letter Re. No. 257/Mines/2018, dated: 06.08.2020 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

i) Existing Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
10.	T.Pushparaj	Pachapalayam 90/4, 90/1D, 90/1C & 90/2D	1.14.5	17.09.2016 to 16.09.2021	
11.	M.Sundarraaj	Pachapalayam 92/1	1.14.5	17.09.2016 to 16.09.2021	
12.	C.Maragatham	Pachapalayam 92/3, 4, 93/1A, 1B, 2A, 110/3 & 4	5.98.0	17.09.2016 to 16.09.2021	

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13.	R.Chinnasamy	Pachapalayam 83/1A (P) & 2 (P)	1.73.0	13.04.2018 to 12.04.2023	
14.	S.Arunachalam	Pachapalayam 87/1C1A	1.33.0	13.04.2018 to 12.04.2023	
15.	V.Mohandas	Pachapalayam 82/3 & 80/1C1	3.24.5	07.03.2017 to 06.03.2022	
16.	M.Rasamani	Arasampalayam 361/1A & 362/1	0.99.0	01.06.2016 to 31.05.2021	
17.	C.Ganesh	Arasampalayam 151/1E (P)	1.58.0	15.09.2016 to 14.09.2021	
18.	V.Somasundaram	Arasampalayam 360/1B (P) & 1G (P)	0.90.0	17.09.2016 to 16.09.2021	
10.	K.Ravikumar	Arasampalayam 355/2A (P), 2C (P) & 2D1 (P)	1.93.5	02.06.2016 to 01.06.2021	

ii) Expired Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1.	A.Palanisamy	Panchapalayam 85/2B	1.87.5	24.11.2015 to 23.11.2019	
2.	R.Krishnasamy	Pachapalayam 91/1B2, 1B3, 1C, 2A & 2B	0.99.0	17.03.2003 to 16.03.2008	
3.	S.A.Jappan and M.Arunachalam	Pachapalayam 92/2 & 110/2	1.56.0	09.05.2011 to 08.05.2016	
4.	C.Palanisamy	Pachapalayam 82/2A(P), 2B	1.44.5	26.06.2015 to 25.06.2020	
5.	S.Rajan	Arasampalayam 354/2B	2.20.0	08.10.2010 to 07.10.2015	

6.	M. Sivasamy	Arasampalayam 360/1A4, 360/1A5, 1A6	1.48.0	26.06.2015 to 25.06.2020	
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iii) Abandoned Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1.	R. Sampathkumar	Pachapalayam 84/4C	0.46.5	10.06.2014 to 09.06.2018	-
2.	K.Aruchamy	Pachapalayam 85/2A, 85/1B	0.40.5	08.01.2006 to 07.01.2011	-
3.	K.Palanisamy	Pachapalayam 85/2A, 1C	0.40.5	11.06.2007 To 10.06.2012	-

iv) Proposed Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease period	Remarks
1.	K.Nataraj	Pachapalayam 84/5A	1.48.0	-	Subject Area
2.	R.Nataraj	Pachapalayam 90/2 (P) & 91/1A (P)	1.34.5	-	Precise area communicated 09.09.2019
3.	K.Baby	Pachapalayam 83/1C2, 1C1B	1.33.0	-	Precise area communicated on 16.11.2019
4.	K.M.Subramaniam	Pachapalayam 94/1A, 2A3, 8B, 9A, 10A	2.98.0	-	Lease applied

v) Future Proposed Quarries

S. Nos.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
--- NIL ---					

Appraisal by SEAC: -

Proposed Rough Stone & Gravel Quarry lease over an extent of 1.48.0 Ha in S.F.Nos.84/5A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Thiru.K.Nataraj-For Environmental Clearance.


MEMBER SECRETARY

The proposal was placed for appraisal in the 299th meeting of SEAC held on 23.07.2022. The details of the project furnished by the proponent are given on the website (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, Thiru.K.Nataraj has applied for Environmental Clearance for the proposed Rough stone & Gravel quarry lease over an extent of 1.48.0 Ha at S.F.Nos.84/5A of Pachapalayam Village, Sular Taluk, Coimbatore District, Tamil Nadu.
 2. The total area in the cluster exceeds 5 ha and hence the project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
 3. Earlier ToR was issued by SEIAA-TN vide Lr. No. SEIAA-TN/F.No.8043/SEAC/ToR-915/2020 dated: 16.03.2021 with a condition that considering the Environment point of view, committee decided to restrict the ultimate depth of mining to 28m (3m + 25m) BGL and the same was accepted by the proponent. Hence the restricted quantity that shall be mined as per the approved mining plan is Rough Stone: 59704 Cu.m and Gravel: 1950 Cu.m.
 4. Public Hearing was conducted on 21.01.2022
 5. Project proponent EIA report submitted to SEIAA-TN on 13.05.2022.
- The salient features of the project are as follows:

Based on the presentation and documents furnished by the project proponent, SEAC **decided to recommend the proposal for the grant of Environmental Clearance** for the production of 59704 cu.m of Rough stone & 1950cu.m of Gravel for an ultimate depth of 28m, subject to the standard conditions as per the Annexure I of this minutes & normal conditions stipulated by MOEF &CC, in addition to the following specific conditions:

1. **The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of thirty years, whichever is earlier, vide MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.**

2. Tree plantation & fencing around the mine lease area shall be completed before starting the production.
3. **Mine manager and other statutory competent persons such as blaster (or) mine mate shall be appointed before the commencement of mining operation as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations (MMR), 1961. The PP shall send the Notice of Opening of the proposed quarry to the Regional Inspector of Mines/Director of Mines, Chennai Region as per MMR, 1961 before obtaining the CTO from TNPCB.**
4. Since habitations are located at a distance range of 300-500 m, the PP shall use only the jack hammer drilled shallow holes (32-34 mm dia & 1.5 m length) with a device for collection of dust from drilling (dust extractor facility) to ensure the environmentally acceptable drilling operations.
5. The PP shall prepare a Standard Operating Procedure (SOP) indicating the timing of the blasting, safety measures, etc. in consultation with the owners/PPs of the other quarries located within the vicinity of this cluster project for carrying out the blasting operation smoothly, without affecting the legislative requirements of MMR 1961 & related DGMS Circulars.
6. The PP shall ensure that only controlled blasting operation involving NONEL initiation system and muffle blasting shall be carried out in the quarry such that the blast-induced ground vibration level (Peak Particle Velocity) measured in the houses/structures located at a distance of 350 m shall not exceed 2.0 mm/s and no fly rock travel beyond 20 m from the blast site.
7. The PP shall ensure that the blasting time is communicated to all the concerned residents around a radial distance of 500 m from the blast site and necessary sentries shall be provided such that no person/fauna is present in the danger zone.
8. The PP shall also explore the possibility of carrying out the 'Amalgamation' of the other adjacent quarries through the relevant 'Modified Mining Plan' approved by the competent authority, with prior permission from the **Regional Inspector of Mines/Director of Mines, Chennai Region** for preparing a suitable 'Progressive Mine Closure Plan' towards safe environment.
9. The PP shall prepare a Standard Operating Procedure (SOP) indicating the travelling route, safety measures, etc. in consultation with the owners/PPs of the other quarries


MEMBER SECRETARY

located within the vicinity of this cluster project for carrying out the transportation operation smoothly, without affecting the legislative requirements of MMR 1961 & related DGMS Circulars.

10. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project proponent shall ensure that the road is not damaged due to transportation of the quarried earth; and transport of the material will be carried out in accordance with the IRC Guidelines in order to comply with traffic congestion and density.
11. As per the MoEF& CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall adhere EMP furnished.
12. As accepted by the Project proponent the CER cost is Rs. 5 lakhs and the amount shall be spent as committed, before obtaining CTO from TNPCB.

ANNEXURE-I

1. The proponent shall mandatorily appoint the required number of statutory officials and the competent persons in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations, 1961.
2. The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit before the commencement of the operation and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
3. Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required in connection with the concerned Govt. Authority.
4. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of

approved mining plan modified after grant of EC or granted by State Govt. in the form of Short Term Permit (STP), Query license or any other name.

5. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
6. The proponent shall ensure that the slope of dumps is suitably vegetated in scientific manner with the native species to maintain the slope stability, prevent erosion and surface run off. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps.
7. Perennial sprinkling arrangement shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.
8. The Project Proponent shall carry out slope stability study by a reputed academic/research institution such as NIRM, IIT, Anna University for evaluating the safe slope angle if the proposed dump height is more than 30 meters. The slope stability report shall be submitted to concerned Regional office of MoEF&CC, Govt. of India, Chennai as well as SEIAA, Tamilnadu.
9. The Proponent shall ensure that the Noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction measures undertaken accordingly. The report on the periodic monitoring shall be submitted to TNPCB once in 6 months.
10. Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
11. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University and local school/college authorities.

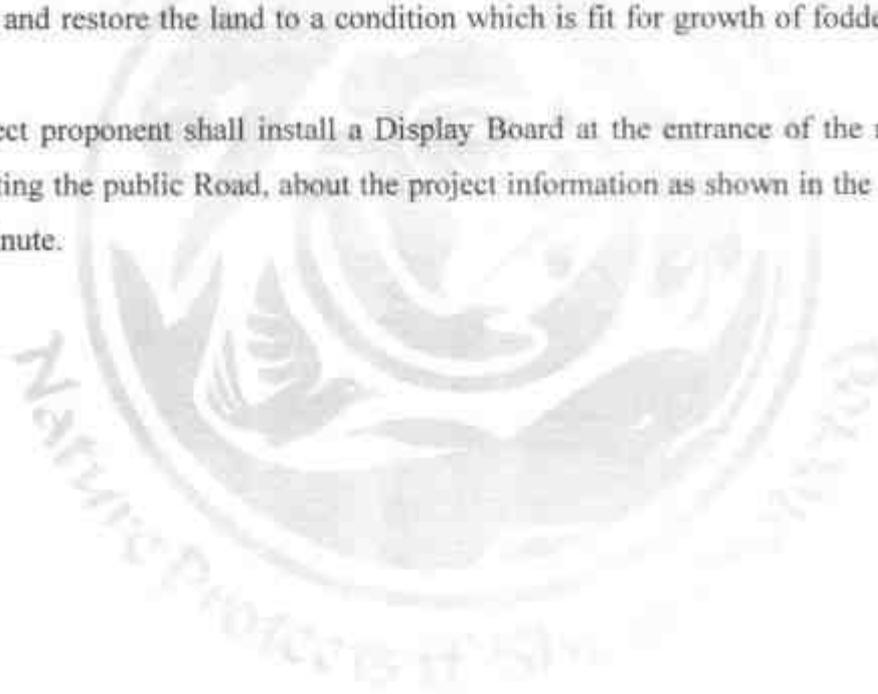
The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.

12. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper escapements as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.
13. **Noise and Vibration Related:** (i) The Proponent shall carry out only the Controlled Blasting operation using NONEL shock tube initiation system during daytime. Usage of other initiation systems such as detonating cord/fuse, safety fuse, ordinary detonators, cord relays, should be avoided in the blasting operation. The mitigation measures for control of ground vibrations and to arrest fly rocks should be implemented meticulously under the supervision of statutory competent persons possessing the I / II Class Mines Manager / Foreman / Blaster certificate issued by the DGMS under MMR 1961, appointed in the quarry. No secondary blasting of boulders shall be carried out in any occasions and only the Rock Breakers (or) other suitable non-explosive techniques shall be adopted if such secondary breakage is required. The Project Proponent shall provide required number of the security sentries for guarding the danger zone of 500 m radius from the site of blasting to ensure that no human/animal is present within this danger zone and also no person is allowed to enter into (or) stay in the danger zone during the blasting. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs. (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.
14. Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
15. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management" and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.

16. The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
17. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the quarried rough stones; and transport of rough stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.
18. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
19. After mining operations are completed, the mine closure activities as indicated in the mine closure plan shall be strictly carried out by the Proponent fulfilling the necessary actions as assured in the Environmental Management Plan.
20. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.
21. The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
22. The project proponent shall ensure that the provisions of the MMRD, 1956, the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are complied by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
23. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB) and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.


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24. The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
25. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
26. All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.
27. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
28. The Project proponent shall install a Display Board at the entrance of the mining lease area/abutting the public Road, about the project information as shown in the **Appendix -II** of this minute.



Appendix - I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Azadirachta indica</i>	Vilvam	விவம்
2	<i>Aletrisanthura javanica</i>	Manjath	மஞ்சாத்
3	<i>Albizia lebbek</i>	Vaagai	வாளை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharas	மந்தாரச்
6	<i>Bauhinia racemosa</i>	Aathu	ஆது
7	<i>Bauhinia tomentosa</i>	Iruvathu	இருவாது
8	<i>Buchanania arillaria</i>	Kattuma	கட்டமா
9	<i>Berzansia flabellifer</i>	Pavai	பவை
10	<i>Bixa monacantha</i>	Murakkamaram	முரக்கமரம்
11	<i>Bobax coila</i>	Ilayu, Sevilaya	இலாயு
12	<i>Calexyphyllum inaebyllum</i>	Pannai	பன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சரகண்டரை
14	<i>Cassia rostrata</i>	Sengondrai	செங்கண்டரை
15	<i>Chloroxylon zizyphum</i>	Puramaram	புரமரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Marjallayy	கொங்கு, மர்ஜல்லாய்
17	<i>Cordia dichotoma</i>	Naruvili	நரூவில்
18	<i>Crotone alamusu</i>	Mavaluripun	மாவலுரிபுன்
19	<i>Dillenia indica</i>	Liva, Ucha	லிவா
20	<i>Dillenia pentagyna</i>	SeruUva, Sitruzha	செருவா
21	<i>Diospyros ebenum</i>	Karungai	கரங்கை
22	<i>Diospyros chloroxylon</i>	Vagavai	வகவாய்
23	<i>Ficus amplissima</i>	Kallichu	கல்லை
24	<i>Hibiscus tiliaceus</i>	Aatropoovaram	ஆத்ரபோவரம்
25	<i>Hibiscus limata</i>	Aacha	ஆச்சா
26	<i>Holoptilus integrifolia</i>	Aayili	ஆயில்
27	<i>Linnus sircumandelica</i>	Odhnam	ஒடநம்
28	<i>Lagerstrœmia speciosa</i>	Poo Marudhu	பூ மரூது
29	<i>Lopanthus tetraphylla</i>	Neikottamaram	நைகொட்டமரம்
30	<i>Linum acidissimum</i>	Vila maram	வில்லாமரம்
31	<i>Litsea glutinosa</i>	Pinnappattai	பின்னப்பட்டை
32	<i>Madhucia longifolia</i>	Iluppai	இலுப்பை
33	<i>Mamillaria hexandra</i>	UlakkaiPalai	உலக்கைபலை
34	<i>Mimosa elmeri</i>	Magathamaram	மாத்தாமரம்
35	<i>Mitragyna parvifolia</i>	Kadamba	கடம்பா
36	<i>Mirinda pubescens</i>	Nura	நூரா
37	<i>Mirinda citrifolia</i>	Vellai Nura	வில்லை நூரா
38	<i>Pongamia sylvatica</i>	Eachi	ஏச்சி
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

40	<i>Prenna mollissima</i>	Murrai	முரை
41	<i>Prenna serratifolia</i>	Narumuruva	நரூமுறுவா
42	<i>Prenna tomentosa</i>	Malapooaram	மலப்புரம்
43	<i>Procytis cinerea</i>	Vayru maram	வாய் மரம்
44	<i>Pterocarpus maritimus</i>	Vengai	வெங்கை
45	<i>Pterospermum canescens</i>	Vetunangu, Tada	வெதுங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	பொலா
47	<i>Puffranjira rosburyle</i>	Karpala	கர்ப்பலா
48	<i>Salmdora persica</i>	Ugai Maram	உகை மரம்
49	<i>Sapindus emarginatus</i>	Manipuragan, Soarpukai	மாண்புரம்
50	<i>Sapota asoca</i>	Asoca	ஆசொ
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yethi	யேதி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேர்தங்கு
54	<i>Syzygium cumini</i>	Navai	நவை
55	<i>Terminalia belleric</i>	Thandri	தாந்திரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வென் மரூது
57	<i>Teona ciliata</i>	Sandhana vembu	சாந்தனா
58	<i>Thompsonia populnea</i>	Puvaram	புவரம்
59	<i>Waleurathibata</i>	valura	வலூரா
60	<i>Wrightia tinctoria</i>	Veppalai	வேப்பலை
61	<i>Pithecellobium dulce</i>	Kodukkappuli	கொடுக்கப்பூ

3. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
4. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone.
5. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity.
6. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
7. The activity should not result in CO2 release and temperature rise and add to micro climate alternations.
8. The mining closure plan should be strictly adhered to with appropriate soil rehabilitation measures to ensure ecological stability of the area.
9. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.
10. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife.
11. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem.
12. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution, to water sources in the area.
13. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
14. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status.


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15. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.
16. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
17. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms.
18. The proponent shall ensure that the activity does not result in invasion by invasive alien species.
19. Actions to be taken to promote agro forestry, mixed plants to support biodiversity conservation in the mine restoration effort.
20. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
21. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health
22. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.
23. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
24. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighbouring open wells and bore wells.
25. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels.
26. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) to be planted.
27. The proponent shall ensure that the activities do not disturb the resident and migratory birds.
28. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).

29. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.
30. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
31. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
32. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoin reserve forests and areas around.
33. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
34. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.
35. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.

Part-A: Conditions to be Complied before commencing mining operations: -

1. **The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that**
 - I. **The project has been accorded Environmental Clearance.**
 - II. **Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.**
 - III. **Environmental Clearance may also be seen on the website of the SEIAA.**
 - IV. **The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.**
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.


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5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at

- specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
- i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
- i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise,
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
 - v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed levels.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps: -
- i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.


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27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous & other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
34. It shall be ensured that the total extent of nearby quarries (existing, abandoned and proposed) located within 500-meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.


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35. It shall be ensured that there is no habitation is located within 300-meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Bunds to be provided at the boundary of the project site.
39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.
43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution


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of mining.

51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
57. All required sanitary and hygienic measures should be in place before starting
58. construction activities and they have to be maintained throughout the construction phase.
59. The company shall stress upon the preventive aspects of occupational health.
60. A separate environment and safety management cell with qualified staff shall be set up before commissioning of construction activities and shall be retained throughout the lifetime of the industry, for implementation of the stipulated environmental safeguards.
61. A scientific site/ ecological rehabilitation and restoration plan on long term basis should be drawn to carryout restoration with native species and Bio diversity.
62. The Green/Blue plan should guide the restoration of the site. The rehabilitation/restoration plan should be submitted to SEIAA-TN within one month. If applicable.
63. The existing water bodies should not be disturbed to ensure sustainable environment for aquatic life forms.

64. The proponent should completely implement all environmental pollution control measures as detailed in the EIA report and in the additional report.
65. Avenue plantation wherever needed has to be carried out along the route for dust suppression.
66. The green belt developed for the prevention of dust pollution should not form a part of the larger green belt development envisaged in the EIA report.
67. Regular monitoring and check up for pulmonary and carcinogenic diseases to be carried out regularly, not only for the workers involved in the mines but also to the people in the villages adjoining the mines. Interaction with the Primary Health Centre & district medical officer should be on regular basis to monitor the incidence of the diseases if any and to provide suitable medical facility for the patients.
68. Monitoring of well water levels and water quality of the wells in the locations furnished in the EIA report shall be done during pre-monsoon and post monsoon period and results submitted to the Regional Office of MoEF, Chennai and SEIAA.
69. Monitoring of water quality and air quality in and around the project site in the selected monitoring points as mentioned in the EIA report shall be continued regularly involving Academic Institutions.
70. Hydro geological study including infiltration test shall be conducted by any reputed agency to estimate leachate quantity.
71. Regular medical check-up for mine workers and nearby residents around the project site involving community medical centre/NIMH shall be conducted.
72. As per norms, the health study should be conducted through competent/approved health organization and report submitted for one year.
73. The effective safe guard measures shall be provided to control particulate dust level in critical areas, transfer points and haul road within the mine area.
74. NOC from the State GWA for drawing ground water shall be obtained, if ground water table is intersected.
75. Green belt shall be provided as per norms of MoEF& CC, GOI, in consultation with local DFO.
76. All the recommendations made in the EIA report of the project shall be effectively implemented.


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77. A booklet containing the Dos and Don'ts shall be prepared in vernacular languages for the use of the mine engineers/ managers and the workers to ensure that all necessary environmental, safety and health measures are undertaken.
78. All the environmental protection measures and safeguards as recommended in the EIA report shall be complied with.
79. Hydro geological study of the area shall be reviewed annually and report submitted to the Authority. No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the operation of the Mining activity.
80. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of a Senior Executive.
81. The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at Chennai, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO₂, NO_x or critical sector parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

Part B: General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be

- carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
 7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
 8. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
 9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
 11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
 12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
 13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.


MEMBER SECRETARY

16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai - 32.
7. The District Collector, Coimbatore District.
8. The Commissioner of Geology and Mines, Guindy, Chennai - 32.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.

Signature Not Verified
Digitally signed by Thiru. Deepak
S. Bilgi
Member Secretary
Date: 9/17/2022 7:03:53 PM
Page 32 of 32
275 A



MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULE 19 OF TAMILNADU MINOR MINERAL CONCESSION RULES, 1959 & AS PER
AMENDMENT UNDER RULE 41 & 42)
(Lease Period = Five years)

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 1.73.0HA
S.F.NOS : 83/1A(P) & 83/2(P)
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE
STATE : TAMILNADU

FOR

APPLICANT

Thiru.R.Chinnasamy,
S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.

PREPARED BY

A.Jagannathan BE., F.C.C., M.M.E.A.,
Qualified Person
RQP/MAS/019/87/A

Old.No.260-B, New No: 17,
Advaltha Ashram Road, Alagapuram Post,
Salem - 636 004.

Cell: 94433 56539, E-mail: geothangam@gmail.com,

R.Chinnasamy,
S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of Rough Stone and Gravel Quarry lease Applied area in S.F.Nos. 83/1A(P) & 83/2(P) over an extent of 1.73.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared by

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

I request the District Collector, Coimbatore to make further correspondence regarding the modification of the Mining Plan with the said Qualified person at his following address.

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,
Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.

I hereby undertake that all the modifications, if any made in the mining plan by the qualified person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of Applicant

A handwritten signature in black ink, appearing to read "R. Chinnasamy".

R.Chinnasamy

Place: Coimbatore

Date: 06.07.2017

R.Chinnasamy,
S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.



DECLARATION OF THE APPLICANT

The Mining Plan in respect of Rough Stone and Gravel Quarry lease Applied area in S.F.Nos. 83/1A(P) & 83/2(P) over an extent of 1.73.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of Applicant

R.Chinnasamy

Place: Coimbatore

Date: 06.07.2017

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,

Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared Under Rule 19 Of Tamilnadu Minor Mineral Concession Rules, 1959 & As Per Amendment Under Rule 41 & 42 in the preparation of Mining Plan for Rough Stone and Gravel Quarry lease Applied area in S.F.Nos. 83/1A(P) & 83/2(P) over an extent of 1.73.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared for

Thiru.R.Chinnasamy,
S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the District Collectorate, Coimbatore, Tamilnadu for such permissions/ exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Qualified Person Signature

A handwritten signature in black ink, appearing to be "A. Jagannathan".

A.Jagannathan BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

Place: Salem
Date: 12.07.2017

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,

Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan for Rough Stone and Gravel Quarry lease Applied area in S.F.Nos. 83/1A(P) & 83/2(P) over an extent of 1.73.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared for

Thiru.R.Chinnasamy,

S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No. 5, IInd Street, Block - AA, Anna Nagar, Chennai-40, Tamilnadu for such permissions/exemptions/relaxations and approvals.

It is also certified that information furnished in the mining plan are true and correct to the best of my knowledge.

Qualified Person Signature


A.Jagannathan BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

Place: Salem

Date: 12.07.2017



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	<u>PART-A</u>	
3.0	Geology and Mineral Reserves	5
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LIST OF ANNEXURES

S.No.	Description	Annx.no.
1	Copy of Precise area communication letter	I
2	Copy of FMB	II
3	Copy of Village Map	III
4	Copy of Patta	IV
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LIST OF PLATES

S.NO	DESCRIPTION	Plate No
1.	LOCATION PLAN	I
2.	TOPOSKETCH OF QUARRY LEASE APPLIED AREA COVERING 10KM RADIUS	IA
3.	ENVIRONMENTAL PLAN	IB
4.	KEY PLAN	IC
5.	QUARRY LEASE & SURFACE PLAN	II
6.	TOPOGRAPHY, GEOLOGICAL PLAN & SECTIONS SHOWING YEARWISE DEVELOPMENT & PRODUCTION	III
7.	CONCEPTUAL PLAN & SECTIONS	IV

11 AUG 2017

**MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY
OVER AN EXTENT OF 1.73.0HA IN PACHAPALAYAM VILLAGE,
SULUR TALUK, COIMBATORE DISTRICT, TAMILNADU**

(PREPARED UNDER RULE 19 OF TAMILNADU MINOR MINERAL CONCESSION RULES, 1959 & AS PER AMENDMENT
UNDER RULE 41 & 42)

INTRODUCTION AND EXECUTIVE SUMMARY

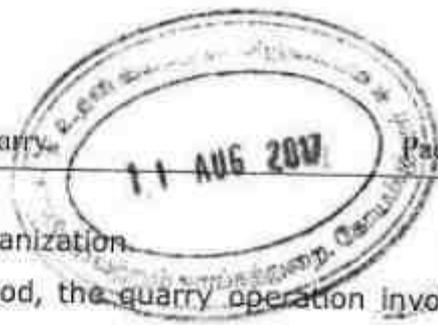
The present Mining Plan and Environmental Management plan is prepared for Thiru.R.Chinnasamy, S/o.Ramasamy Gounder, Kallikattu Thottam, Thekani, Chettipalayam via, Coimbatore District.

The applicant applied to quarry Rough stone and Gravel in the S.F.Nos. 83/1A(P) & 83/2(P) over an extent of 1.73.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District.

The application was processed by the District Collector Coimbatore and passed a Precise area communication letter vide **Rc.No. 117/ Mines/2017 dated 05.07.2017** to submit Mining Plan for the approval in Department of Geology and Mining, Coimbatore, Environmental Clearance from the District Level Environment Impact Assessment Authority, Coimbatore.

Short Notes of Mining plan

- a. Village Panchayat - Pachapalayam
- b. Panchayat Union - Sulur
- c. The Total Mineable Reserves are **1,08,440m³** of Rough stone and **3570m³** of Gravel in the entire area.
- d. The proposed quantity of reserves/ (level of production) for Five year plan period is to be mined is **1,08,440m³** of Rough stone and **3570m³** of Gravel.
- e. Total extent of the lease applied area = 1.73.0Ha out of 2.92.0Ha.
- f. Topography of the area = The area exhibits almost plain topography (quarried out pits is observed).
- g. Existing Depth = 12m Depth below ground level.
- h. Proposed Depth of mining = upto 37m Depth below ground level.
- i. Lease period = Five years.
- j. It is a fresh lease (the area has been quarrying earlier during previous lease period)



- k. Method of mining / level of mechanization.
Opencast semi mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- l. Type of machineries proposed in the quarrying operation.
Excavators attached with rock breaker(Rental Basic)
Jack hammers 30-32mm dia
Tractor mounted compressor (2 jack hammer capacity).
- m. No trees will be uprooted due to this quarrying operation.
- n. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone and Gravel.
- o. There is No Export of this Rough stone and Gravel.
- p. Topo sketch covering 10Km and 1Km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archeological importance, places of worships is marked and enclosed as Plate No IA and IB.
- q. The lease applied area is about 1.73.0Ha bounded by Nine corners; the corners are designated as 1-9 Clock wise from the South Western corner the Co - ordinates for the all the corners are clearly marked in the Topography, Geological Plan and section enclosed as (Plate No-III)
- r. The diagram showing the Mining area, dimensions of the pit, its proposed depth of mining for the lease period are enclosed as Plate No III.
- s. The lease applied area is 10Km away from the interstate boundary, protected area under wild life protection ACT 1972, critically polluted areas as identified by CPCB and notified Eco sensitive areas.
- t. There are no wastages anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 11 employees are deploying in the quarrying operation.
- v. Total Cost of the project is about **Rs.40,04,000/-**



1. GENERAL INFORMATION

1.1 a) Name of the Applicant : Thiru.R.Chinnasamy

b) Address of the Applicant (With Phone No and E-mail Address)

Address : R.Chinnasamy,
S/o.Ramasamy Gounder,
Kallikattu Thottam, Thekani,
Chettipalayam via,
Coimbatore District.

Mobile No : 99655 05523

Pin Code : 641 201

c) Status of the Applicant (Individual / Company / Firm).

The Applicant is an Individual.

1.2 a) Mineral which the Applicant intends to mine

The Applicant intends to quarry Rough stone and Gravel only. No other Minerals observed in the lease applied area.

b) Precise area communication letter details received from the Competent authority of the Government.

The precise area communication letter was received from the District Collector Coimbatore vide **Rc.No. 117/ Mines/2017 dated 05.07.2017** to obtain mining plan and obtain Environmental Clearance from the DEIAA, Coimbatore.

C) Period of permission / lease to be granted.

The applicant applied permission to quarry Rough stone and Gravel for the period of five years/ The District Collector considered for the Grant of quarry lease for the period of five years.



d) Name and address of the Qualified Person / Authorized person preparing the mining plan.

Name : A.Jagannathan BE.,F.C.C.,M.M.E.A.,
Qualified Person

Address : Regd.off.Old No.260-B, New No. 17,
Advaitha Ashram Road,
Alagapuram, Salem.

Mobile : 94433 56539.

Tele Fax : 0427- 2431989

Registration No : RQP/MAS/019/87/A

Valid up to : 17.11.2021

Email : geothangam@gmail.com

2.0 Location

a) Details of the area with location map

The lease applied area is about 19Km South Western Side of Sulur and 18Km South Eastern of Coimbatore, the lease applied area located along Thekani Road at the distance of 1Km(Eastern).



Fig. 1.0 Location Map of the Lease applied area

TABLE - 1

District	Taluk	Village	S.F.Nos.	Area in Ha.
Coimbatore	Sulur	Pachapalayam	83/1A(P) & 83/2(P)	1.73.0Ha
Total Extent				1.73.0Ha

**b) Classification of the area (Ryotwari/ Poramboke / others).**

It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation.

c) Ownership / Occupancy of the applied area (surface right).

It is a Patta land Registered in the name Applicant (Thiru.R.Chinnasamy) vide patta No.774. (Refer Annexure No.IV)

d) Toposheet No. with latitude and longitude.

The lease applied area falls in the Toposheet **No.58-F/01** Latitude between **10°52'43.95"N to 10°52'49.57"N** and Longitude between **77°02'47.40"E to 77°02'54.89"E** on WGS datum-1984. Please refer the Plate No (Plate No I to II).

e) Existence of public road / Railway line, if any nearby and approximate distance.

There is an existing metal road is on the Eastern side, this metal road connecting in the Thekani village road at a distance of 1Km.

The road from the quarry to main road is already in exists, the same road will be maintained and utilized for transportation besides trees will be planted on the either side of the road to prevent dust and noise to the nearby areas. The area in and around the quarry is devoid of Vegetation and plantation.

The Nearest Railway line is Coimbatore- Dindigul which is about 1Km from the Western side of the area.

PART - A**3. GEOLOGY AND MINERAL RESERVES.****3.1 Brief description of the Topography and general Geology of the area (with plans).**

The Topography of the area is almost plain terrain covered by the Gravel , the thickness of the Gravel Formation is about 2m, Charnockite formation is noticed followed by the Gravel formation.

The crystalline rocks of the district are derived through a complex evolutionary history during Archaean and Proterozoic times with multiple deformations, anatexis, intrusions and polyphase metamorphic events.



Fig.2.0. Topographical View of lease applied area

The massive Charnockite formation is clearly inferred from the existing pit. The slope is gentle towards North Western side. The altitude of the area is above 390m (Maximum) from MSL.

Water table is found at a depth of 60m in summer and at 57m in rainy seasons. Average annual rainfall is about 900mm during NE monsoon. Archaean forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body trends $N30^{\circ}E - S30^{\circ}W$ with dipping towards $SE60^{\circ}$.

The general geological sequences of the rocks in this area are given below.

↑ AGE	FORMATION
Recent	- Quaternary weathered formation (Gravel)
-----Unconformity-----	
Archaean	- Charnockite Peninsular Gneiss complex.

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3.2 Details of exploration already carried out, if any

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the area. The Rough stone formation is clearly inferred from the existing quarry pit.

3.3 Estimation of Reserves**a) Geological reserves with geological sections on a scale of 1:1000 / 1:500.**

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally Three sections have been drawn, one section drawn Length wise as (X-Y) and another Two sections drawn Width wise as (A-B) & (C-D) to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 and vertical as 1:500 scale (please refer the Geological plan and sections Plate No- III. As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III)

Geological Resources of Rough stone is calculated upto a depth of 37m below the ground level.

Geological Resources are calculated in area method.

Total Extent of the area	=	1.73.0Ha	
Area in square meter	=	1.73.0X 10,000	= 17,300Sqm
Gravel	=	2m below the ground level	
	=	17,300Sqm X 2m Depth	
	=	34,600m³ of Gravel.	
Rough Stone formation	=	35m below the ground level.	
	=	17,300Sqm X 35m Depth below the Ground level.	
	=	6,05,500m³ of Rough stone upto a depth of 35m.	
Total Geological Resources of Rough Stone	:	6,05,500m ³	
Total Geological Resources of Gravel	:	34,600m ³	

Already Excavated.

The area has been quarried in earlier the existing pit dimensions are follow
Table-2

Pit.No	Length Avg in (m)	Width Max in (m)	Depth Max in (m)
I	131m	48m	7m
II	67m	80m	12m

Already Excavated Gravel Formation.

The Gravel formation has been removed during the previous quarrying work, the same was dumped on the boundary barrier with following dimensions:

$$\text{Dump} = 42\text{m} \times 17\text{m} \times 5\text{m}(\text{h}) = 3570\text{m}^3$$

Available Mineable Reserves.

The available mineable reserves are calculated after leaving 7.5m & 10m safety distance to the adjacent patta lands, Approach road and Bench loss.

Table-3

MINEABLE RESERVES					
Section	Bench	Length in m	Width in m	Depth in m	Mineable Reserves of Rough Stone in m^3
XY-AB	III	124	37	5	22940
	IV	120	27	5	16200
	V	115	17	5	9775
	VI	110	7	5	3850
	TOTAL					52765
XY-CD	IV	60	63	5	18900
	V	55	53	5	14575
	VI	50	43	5	10750
	VII	45	33	5	7425
	VIII	35	23	5	4025
	TOTAL					55675
GRAND TOTAL					108440

The available mineable reserves have been computed as **1,08,440m³** of Rough stone at the rate of 100% recovery upto depth of 37m below the ground level for a period of Five years and **3570m³** of Gravel formation (from the existing dump).



4.0 Mining.

4.1 Method of mining (opencast / underground).

Open cast Semi-Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act - 1952.

4.2 Mode of working (mechanized, semi mechanized, manual).

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Semi- Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining.

4.3 Proposed Bench Height and Width.

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.



4.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.)

The overburden is in the form of Gravelly formation, the Gravel formation has been removed during previous quarry operation, and the same will be dumped along the boundary barrier. The Dumped Gravel will be directly loaded into tippers for the filling and leveling of low lying areas., this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

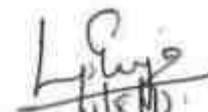
The Composite plan, Development plan and section indicating the Pit lay out, Green belt development are shown in Plate No-III.

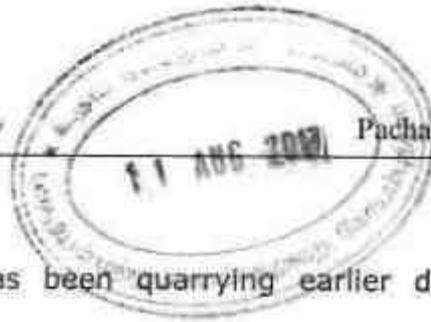
Year wise development and Production table

Table-4

YEARWISE RESERVES							
Section	Year	Bench	Length in m	Width in m	Depth in m	Volume in m ³	Recoverable Reserves of Rough stone in m ³
XY-AB	I	III	124	37	5	22940	22940
		TOTAL						22940
XY-CD	II	IV	120	27	5	16200	16200
		IV	20	63	5	6300	6300
	TOTAL						22500
	III	IV	40	63	5	12600	12600
V		55	53	5	14575	14575	
TOTAL						27175	
XY-AB	IV	V	115	17	5	9775	9775
		VI	110	7	5	3850	3850
		VI	50	43	5	10750	10750
TOTAL						24375	
XY-CD	V	VII	45	33	5	7425	7425
		VIII	35	23	5	4025	4025
		TOTAL						11450
GRAND TOTAL							108440

The applicant has proposed to carry out **1,08,440m³** of Rough for the period of five years and **3570m³** of Gravel formation (from the existing dump).


 ASSISTANT DIRECTOR
 DEPARTMENT OF GEOLOGY & MINING
 COIMBATORE DISTRICT



4.5 Machineries to be used.

a) For Mining

It is a fresh lease (the area has been quarrying earlier during previous lease period),

1. Excavator of 0.90Cbm bucket capacity (with Rock breaker attachment).
Excavator will be used on rental basis.
2. Tractor mounted compressor attached with Jackhammer (2 jack hammer capacity).

b) Loading Equipment

The quarried out Rough stone will be loaded manually, if huge volume of Rough stone accumulates, the same will be loaded with the help of hired excavator.

c) Transportation (includes within the mine and mine to destination).

The Rough stone will be transported from the quarry pit to needy customer sites/Crushing unit by the 10/20Tons capacity tippers.

4.6 Disposal of Overburden/Waste

The overburden is in the form of Gravelly formation, the Gravel formation has been removed during previous quarry operation, and the same will be dumped along the boundary barrier. The Dumped Gravel will be directly loaded into tippers for the filling and leveling of low lying areas., this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tipper to the needy customers.

4.7 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations.

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for five years, the ultimate pit limit (dimension) at the end of lease period is given below.

Table-5

Description	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
Pit-I	131m	48m	27m
Pit-II	67m	80m	37m



Afforestation has proposed on the 7.5m safety barrier by planting neem trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF Norms. Please refer plat No.III & IV.

It is propose to engage any local Institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

5.0 BLASTING

5.1 Blasting pattern

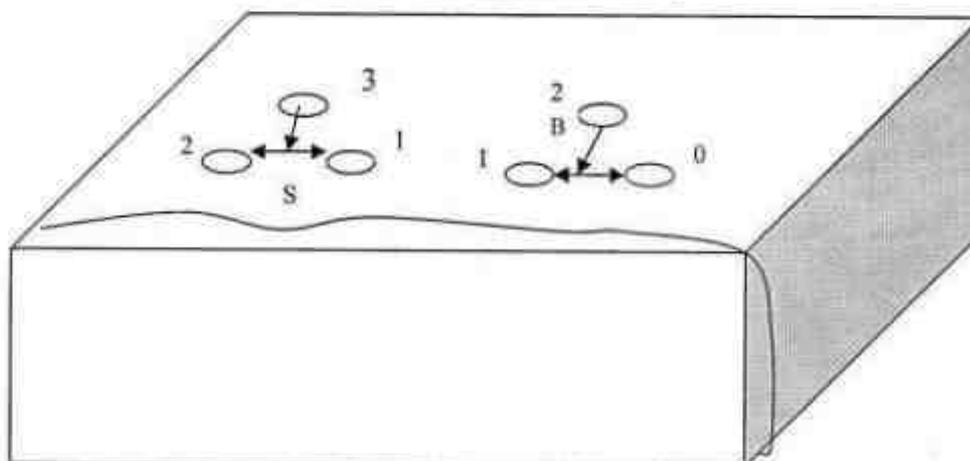
The quarrying operation is proposed to carried out by Semi Mechanized Opencast Method in conjunction with conventional method of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

Drilling and Blasting pattern

Drilling and blasting parameters are as follows

Depth of Each hole	:	1.2m-1.5m
Diameter of hole	:	30-32mm
Spacing between holes	:	0.5m
Burden for hole	:	0.5m
Pattern of hole	:	Zigzag
Inclination of holes	:	80°from horizontal
Use of delay detonators	:	25millisecond delays.
Detonating fuse	:	"Detonating" Cord
Hole pattern	:	Staggered in two to three rows

BLASTING PATTERN DRAWING



Spacing (S)	:	0.5m
Burden (B)	:	0.5m
Delay Detonators	:	0,1,2 ...



5.2 Type of explosives to be used

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

5.3 Measures proposed to minimize ground vibration due to blasting

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.

Delay detonators

Delay blasting (milli second delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantage of delay blasting are

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day

No of Holes	= 72Holes
Yield	= 216Tons
Powder factor	= 6 tons/Kg of explosives
Total explosive required	= 36Kg-Slurryexplosives
Charge/ hole	= 0.5 Kg
Blasted at day time	= 5-6p.m(whenever required)

5.4 Storage and safety measures to be taken while blasting

They will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies will have experienced blaster. He will explode in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. Magazine is available at the quarry site to temporarily store the explosives.

6.0 Mine Drainage**6.1 Depth of water table (based on nearby wells and water bodies).**

The water table in the area is 60m BGL in summer season and 57m in Rainy season which is observed from the nearby wells and the data obtained from existing Government and private boreholes.

Table -6

S.No	Type	Distance & Direction	Location
1	Bore Well	340m SE side	10°52'37.85"N 77°02'59.57"E

Hence the ground water will not be affected in any manner due to the quarrying operation during the entire life period.

6.2 Arrangements and places where the mine water is finally proposed to be discharged.

Quarry operations are confined well above the water table during the entire lease period.

If water is encountered due to rain water and seepage, the same will be pumped out by SHP water pumps to the afforestation and Green belt development areas. Besides the water will also be used for dust suppression on haul roads during Haulage of machineries.

7.0 OTHER PERMANENT STRUCTURES (also shown in the map)**7.1 Habitations/ Villages natham.**

There is no houses within the radius of 500m from the periphery of the lease applied area.

7.2 Power Lines (HT/LT)

There is no LT/ HT line within the radius of 100m from the periphery of the quarry site.

7.3 Water bodies (river, pond, lake, odai, canal, etc.,).

No major water bodies like river, pond, lake odai etc., water bodies within the radius of 500m.

7.4 Archaeological / historical monuments.

There is no Archaeological / historical monuments within 500m radius from the area.

7.5 Road (NH, SH others)

The nearest National Highway (NH - 209) Coimbatore- Dindigul is about 4Km from the South Western side of the area.

The State Highway (SH-163) Palladam - Chettipalayam is 3.5Km from the North Western side of the area.

7.6 Places of worships.

There is no places of worships within the radius of 500m.

7.7 Reserved forest / forest / social forest / wild life sanctuary etc.

There is no Reserved forest / forest / social forest / wild life sanctuary etc., within radius of 500m.

SALIENT FEATURES

S. No.	Salient Features Present around site	Prescribed safety distance	Actual Distance from the site
1.	Railways, Highways, Reservoirs or Canal	50m	Railway line - 1Km (Coimbatore- Dindigul) Western side. Highways- National Highway (NH-209) Coimbatore- Nagapattinam 4Km from South Western side of area. Reservoir - No reservoir within 10Km radius. Canal- No canals within 1Km Radius.
2.	Village Road	10m	Thekani village road is 1Km from the Eastern side of the area.
3.	Habitation / Village	300m	There is no houses within the radius of 500m. Actual distance are clearly marked in the Plate No I-B.

S.No	Name of the Village	Approximate distance & Direction from lease applied area
1.	Pachapalayam	3Km - NE
2.	Karacheri	2Km - SE
3.	Mayileripalayam	3Km - W
4.	Chettipalayam	4Km - NW

4.	Adjacent Patta Land	7.5m	North -S.F.No.83/2(P) East -S.F.No.82 South - S.F.No.83/1C2,1C1B,1C1A West -S.F.No. 83/1A(P) 7.5m safety distance has been maintained from the patta land.															
5.	Housing area, EB line (HT & LT Line)	50m	There is no houses within the radius of 500m. LT Line - There is no LT Line within the radius of 100m.															
6.	Boundaries of the permitted area	7.5m & 10m	The boundaries of the permitted areas is as follows <table border="1"> <thead> <tr> <th>Direction</th> <th>S.F.No</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>83/2(P)</td> <td>Patta Land</td> </tr> <tr> <td>East</td> <td>82</td> <td>Patta Land</td> </tr> <tr> <td>South</td> <td>83/1C2,1C1B, 1C1A</td> <td>Patta Land</td> </tr> <tr> <td>West</td> <td>83/1A(P)</td> <td>Patta Land</td> </tr> </tbody> </table>	Direction	S.F.No	Classification	North	83/2(P)	Patta Land	East	82	Patta Land	South	83/1C2,1C1B, 1C1A	Patta Land	West	83/1A(P)	Patta Land
Direction	S.F.No	Classification																
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East	82	Patta Land																
South	83/1C2,1C1B, 1C1A	Patta Land																
West	83/1A(P)	Patta Land																
7.	Reserve forest / protected area / ECO sensitive area	10Km	No reserved forest within the radius of 10Km.															

8. EMPLOYMENT POTENTIAL & WELFARE MEASURES

8.1 Employment potential (skilled, semi skilled, un skilled).

The following manpower are proposed to carry out the day-to-day quarrying activities aimed at the proposed production target and also to comply with the statutory provisions of the metalliferous mines regulations, 1961.

a.	<u>Skilled labour</u>		
	Mine Foreman/		
	Permit Mines Manager	:	1
	Excavator operator	:	2
	Jack hammer operator	:	4
	Blaster/ mate	:	1
b.	Semi-skilled	:	
	watchman	:	1
c.	Unskilled- helper	:	2
	Total	:	11

Allowing 10% absenteeism the man power would be around 10, The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations.



It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

8.2 Welfare Measures

a) Drinking Water

Packaged drinking water is available from the nearby approved water vendors in Karacheri which is about 2Km from the South Eastern side of the area. Drinking water shall be readily available at conveniently accessible points during the whole of the working shift.

b) Sanitary Facilities

Hygienic modern Sanitary facilities will be constructed with in the quarrying area as permanent structure and it will be maintained periodically.

c) First aid facility

First aid kits are kept in Mines office room, In case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 2Km South Eastern in Karacheri the competent and Statutory foreman/ permit manager will be in charge of first aid.

d) Labour Health

Periodically medical check up related to occupational health safety will be conducted to all the workers in Applicant own cost.

e) Precautionary safety measures to the labourers.

All the quarry workers will be provided with safety equipments like helmets, Mine Goggles, Ear plugs, Ear muffs, Dust mask, reflector jackets and Safety Shoes as personal protective device as per the specification approved by Director of mines safety. Periodically medical check up will be conducted for all workers for any mine health related problems. Proper training and induction will be given by qualified and experienced safety officer to all employees about the safe and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically to carry out the quarrying operations scientifically to safe guard the men machinery and mineral and to create awareness of conventional opencast quarrying operations.

PART - B**9. ENVIRONMENT MANAGEMENT PLAN****9.1 Existing Land use pattern**

The quarry lease applied area exhibits almost plain topography. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

LAND USE TABLE-7

Description	Present area in (Ha)	Area at the end of Lease period (Ha.)
Area under quarrying	1.16.4	1.16.4
Infrastructure	Nil	0.01.0
Roads	0.02.0	0.02.0
Green Belt	Nil	0.12.0
Unutilized	0.54.6	0.41.6
Grand Total	1.73.0	1.73.0

9.2 Water Regime

Ground water occurrence in this area is 60m depth. The quarrying operation is proposed upto a depth of 37m below the ground level, Hence the quarry operation will not be affected by the ground water.

9.3 Flora and Fauna:

There are no trees observed in the area. Thorny bushes, Neem and Palm are found in around the area. No plants of botanical interest or animals of zoological interest are noticed. There are no cultivation, plantation or agriculture found within the vicinity of the area.

9.4 Climatic Conditions

The area receives rainfall of about 900/per annum and the rainy season is mainly from Oct - Jan during North East, monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

9.5 Human settlement

There is no houses within the radius of 500m, There are few villages located in this area within 5km radius, the approximate distance and population are given below.

Table - 8

S.No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Pachapalayam	3.0Km - NE	200
2.	Karacheri	2.0Km - SE	400
3.	Mayileripalayam	3.0Km - W	500
4.	Chettipalayam	4.0Km - NW	1000

Basic human welfare Amenities such as Health Center, Schools, Communication Facilities, and Commercial Centers etc are available at Kinathukadavu located at a distance of 7km on the South Western side of the area.

9.6 Plan for air, dust suppression

The air quality will be affected by the Suspended Particulate Matter (SPM) this will be generated by the blasting, jack hammer drilling, Loading and unloading during the quarrying Rough stone quarry operation.

The following Mitigations measures will be carried out

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be planted on the exposed surface.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigation Measures will be carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around **Rs 52,000/year**.

9.7 Plan for Noise level control.

The noise level increased due to the excavation, Drilling, Blasting, Transportation and Blasting.

Engineering Noise control:

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low - noise equipments for the Rough stone quarry operation.
- Modifications of older equipments
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.



- The drivers will be strictly inducted to move the vehicle during the transportation not exceed 40 km per hour.
- Sentries with flags & whistle will posted in village junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and 1.5m depth will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse only will be used for rough stone. Hence, ground vibration and noise pollution will be minimal and restricted within the quarry workings.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs 2,000/Year.**

9.8 Environmental impact assessment statement describing impact of mining on the next five years.

The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MoEF. It is B2 Category mine. The estimated budget would be around **Rs. 7,10,000/-**

9.9 Proposal for waste management

There is no waste in this Rough stone and gravel quarry operation.

9.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.)

In the mining plan only a maximum depth of 37m has been envisaged as workable depth for safe & economic mining during the lease period. After quarry reaches the ultimate depth 37m and the end of the lease period fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle. There is no proposal for reclamation and rehabilitation. the barbed wire fencing cost would be around **Rs 1,00,000/-**

9.11 Programme of afforestation (indicate extend, number, name of species to be afforested).

The 7.5m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of neem trees will be planted in a phased manner as described below.

Table - 9

Year	No. of trees proposed to be planted	Survival %	Area to be covered Sq.m	Name of the species	No. of trees expected to be grown
I	30	80%	240	Neem/ Casuarina	24
II	30	80%	240	Neem/ Casuarina	24
III	30	80%	240	Neem/ Casuarina	24
IV	30	80%	240	Neem/ Casuarina	24
V	30	80%	240	Neem/ Casuarina	24

Nearly 1200Sq.m area is proposed to use under afforestation by planting 30 Nos of neem/ Casuarina trees every year with an anticipated survival rate of 80%. (Please refer Plate No.III). The estimated budget for plantation and maintenance of Green belt development would be around **Rs. 30,000/-** for the period of five years.

9.12 Proposed financial estimate / budget for (EMP) environment management:
Budget Provision for the entire quarrying period.

Table -10

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs 3,80,000/-** for the period of five years.

Project cost / investment	
i) Land cost	It is patta land, the present land cost is about Rs.2,00,000/ Ha, hence the total land cost is calculated about Rs.3,46,000/-
ii) Machinery to be used	Excavators attached with rock breaker (Rental Basic) = Rs.10,00,000/- Tractor mounted compressor with jack Hammer and loose tools. = Rs.6,00,000/- Tippers (10/20Tons Capacity) 1No = Rs.10,00,000/-

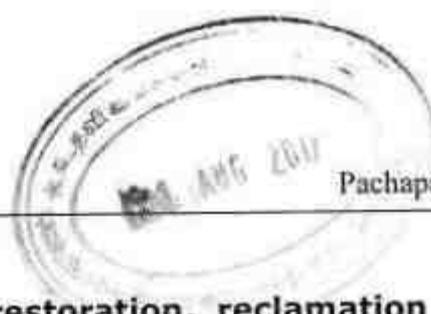
Mining Plan for Rough Stone and Gravel Quarry

Pachapalayam Village

iii) Refilling / Fencing	Fencing will be constructed around the quarry pit to prevent the inherent entry of public and cattles cost would be around Rs.1,00,000/-
iv) Laboureres shed	Labour sheds will be constructed as semi permanent structure. The cost would be around Rs 50,000/-
v) Sanitary facility	Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around Rs. 50,000/-
vi) Others items	First aid room & accessories = Rs. 50,000/-
vii)	<p>A. Fixed asset :-</p> <p>Land cost = Rs 3,46,000/-</p> <p>Labour shed = Rs 50,000/-</p> <p>First aid room and accessories = Rs 50,000/-</p> <p>Sanitary facilities = Rs 50,000/-</p> <p>Total Fixed asset = Rs 4,96,000/-</p> <p>B. Operational Cost :-</p> <p>Machinaries to be used = Rs 26,00,000/-</p> <p>Fencing cost = Rs 1,00,000/-</p> <p>Total operational cost =Rs. 27,00,000/-</p>
(a) Expenditure	
i) Drinking water facility for the laborers	Packaged drinking water is being provided for all the labours. Drinking water is readily available at conveniently accessible points during the whole of the working shift the cost would be around Rs.1,00,000/-
ii) Sanitary arrangement,	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around Rs.50,000/- for the entire period.
iii) Safety kits	All the Safety kits such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided by the applicant own cost the cost would be around Rs. 50,000/-

iv) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around Rs.1,00,000/-
v) Afforestation etc.	Afforestation program will be carried out in the boundary barrier the cost would be around Rs.30,000/- for the five year plan period.
Total Cost = RS. 3,30,000/-	

	<p>C. EMP Cost :- (Per year)</p> <p>Air Quality monitoring = Rs. 52,000/-</p> <p>Water Quality Sampling = Rs. 18,000/-</p> <p>Noise Monitoring = Rs. 2,000/-</p> <p>Ground vibration test = Rs. 4,000/-</p> <p>Total Cost = Rs. 76,000/-</p> <p>Total EMP Cost for the five year period is Rs. 3,80,000/-</p> <p>Total Expenditure and EMP cost (Including EMP Studies) = Rs. 7,10,000/-</p> <p>A+B+C=</p> <p>A. Fixed asset cost = Rs 4,96,000/-</p> <p>B. Operational cost = Rs 27,00,000/-</p> <p>C. EMP Cost = Rs 7,10,000/-</p> <p>Total Project Cost (A+B+C) = Rs 39,06,000/-</p> <p>The applicant ensures to involve corporate social responsibilities (CSR) like providing note books to nearby school, providing drinking water facilities to the nearby villages etc., at around 2.5% from the total project cost the cost would be around Rs 98,000/-</p> <p>Total Project cost = Rs. 39,06,000/-</p> <p>CSR Cost (2.5%) = Rs. 98,000/-</p> <p>Total cost =Rs. 40,04,000/-</p> <p>(The Total Cost of the project including EMP Cost is Rupees Forty lakhs and Four Thousand only)</p>
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**10. MINE CLOSURE PLAN****10.1 Steps proposed for phased restoration, reclamation of already mined out areas.**

There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles. After treating the water the same will be utilized for nearby agriculture purpose to the nearby agriculture lands.

10.2 Measures to be under taken on mine closure as per Act & Rules.

Measure will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarry pit will be fenced by barbed wire to prevent inherent entry of public and cattle.

The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture lands.

10.3 Mitigation Measure To Be Undertaken For Safety And Restoration / Reclamation Of The Already Mined Out Area.

Air quality: (Air quality will be degrade due to the drilling, blasting, mining operation and transportation).

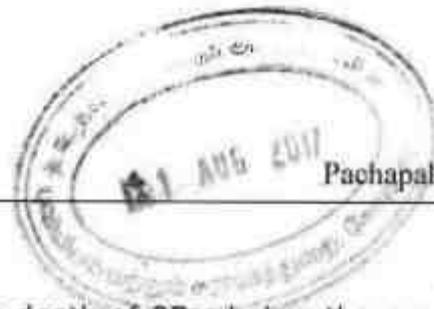
Mitigation measures:

Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air. Air quality will be monitored periodically as per norms.

NOISE AND VIBRATION: (The noise will be formed due to the drilling, blasting, loading and movement of Machineries.

Mitigation measures :

The applicant proposed to carry out the plantation all along the boundary to prevent Noise besides wet drilling will be practiced to prevent dust. All the machineries will be maintained in good conditions as per RTO and TNPCB Norms to prevent Noise, Smoke and vibration.

**WATER REGIME :****Mitigation Measures :**

The quarry operation proposed upto a depth of 37m below the ground level for the five year period, the proposed depth is well above the water table (Summer in 60m and rainy seasons in 57m), hence the water table will not be affected in any.

The seepage and rain water will be drained out from the pit by the 5H.P motor pump and will be discharged through filter media to boundary barrier for afforestation and excess water will be sprayed on haul roads to prevent dust propagation in to the atmosphere. The rough stone quarry will not produce any harmful toxic effluence in the form of solid liquid or gas.

HUMAN HEALTH & SAFETY: Dust will be limited due to the mine operation.

All the labours has been provided with safety equipment's like helmet, Safety Goggles, Ear muff, Hand Glouse, safety jacket, safety belt, and Mine boots etc., at Applicant own cost, As per the specifications of Director of mines safety. The competent qualified person foreman/Permit Mines Manager will provide first aid and will take care of small & minor injuries. If any accident happens, the victim will be taken to the nearby hospital by the Applicant van which is always kept in the mines office. The hospital is about 2.0Km in Karacheri (SE).

**11. ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:**

This Mining plan for Rough stone (Charnockite) and Gravel is under rule 19 of Tamilnadu Minor Mineral concession rules, 1959 & as per amendment under rule 41 & 42. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

Prepared by

A. Jagannathan
A.Jagannathan BE., F.C.C., M.M.E.A.,
RQP/MAS/019/87/A

Place : Salem
Date : 12.07.2017

L. Suresh
11/8/17
ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINES
COIMBATORE DISTRICT

From

Thiru. T.N. Hariharan, J.A.S.
District Collector,
Coimbatore District,
Coimbatore - 18.



Thiru. R. Chinnasamy,
S/o. Ramasamy Gounder,
Kallikaattu Thottam,
Thegarai,
Chettipalayam Via,
Coimbatore District.

R.C. 117/Mines/2017 Dated 05.07.2017

Sir,

Sub Mines & Minerals - Minor Mineral - Coimbatore District - Sulur Taluk - Pachapalayam Village - over an extent of 1.73.0 hectares out of 2.92.0 hectares of patta lands - Survey Nos. 83/1A (Part) and 83/2 (Part) - Application preferred by Thiru. R. Chinnasamy for quarrying Roughstone and gravel - precise area communicated - Mining Plan called for - Reg.

- Ref**
1. Quarry lease application dated 22.02.2017 preferred by Thiru. R. Chinnasamy, S/o. Ramasamy Gounder, Kallikaattu Thottam, Thegarai, Chettipalayam Via, Coimbatore District.
 2. This office letter even number dated 14.03.2017 addressed to the Revenue Divisional Officer, Coimbatore South.
 3. Revenue Divisional Officer, Coimbatore South Letter RC.No 1068/2017/A2 dated 21.04.2017.
 4. Inspection report of the Assistant Director, Geology and Mining, Coimbatore dated 15.05.2017.
 5. G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.

The quarry lease application preferred by Thiru. R. Chinnasamy, S/o. Ramasamy Gounder, Kallikaattu Thottam, Thegarai, Chettipalayam Via, Coimbatore for the grant of quarry lease for quarrying rough stone and gravel over an extent of 1.73.0 hectares out of 2.92.0 hectares of patta lands in SF.Nos. 83/1A (Part) and 83/2 (Part) in Pachapalayam Village, Sulur Taluk, Coimbatore District has been taken up for consideration under rule 19 of Tamilnadu Minor Mineral Concession Rules, 1959 and the following precise area is considered for the grant of quarry lease for a period of 5 years with the conditions stipulated below.



Taluk	Village	SF.Nos	Total Extent (in hect.)	Extent applied for (in Hect.)
Sulur	Pachapalayam	83/1A (Part)	2.125	1.225
		83/2 (Part)	0.795	0.505
		Total	2.920	1.730

1. A safety distance of 7.5 meters should be provided all along the boundary of the area applied for lease and a safety distance of 10 meters should be provided for the approach road passing on the Western side of the applied area.
2. No hindrance shall be caused to the Crusher unit situated on the Northern side of the applied area.
3. While carry out quarry operation, no hindrance shall be caused to the adjoining patta lands and road.
4. The applicant should fence the area with barbed wire before execution of lease deed.
5. Environmental clearance should be obtained from the State Level / District Level Environmental Impact Assessment Authority in respect of the subject area as per the orders of the Hon'ble Supreme court dated 27.02.2012 in IA.No 12-13/2011 in SLP (C No.19629/2009 and office memorandum No.L 11011/47/2011-1A II (M) dated 18.05.2012 of the Ministry of Environment and Forest.

In this regard you are directed to prepare a mining plan for the above mentioned area through the help of Recognized Qualified Person (RQP) and to submit the same before the Assistant Director for getting approval within in a period of 90 days from the date of receipt of this letter as required under rule 41 of Tamilnadu Minor Mineral Concession Rules, 1959.

Sd./xxx
District Collector,
Coimbatore.

//True Copy/By Order//

For District Collector,
Coimbatore.





$$\begin{array}{r} 316 \\ 32 \\ \hline 85 \end{array}$$

$$\begin{array}{r} 200 \\ 26 \\ \hline 608 \\ 101.2 \\ 326 \\ 594 \\ 816 \\ 32 \\ \hline 1542 \\ 624 \end{array}$$

$$\begin{array}{r} 1670 \\ 510 \\ 170 \\ 276 \\ \hline 1683 \end{array}$$

Sl. No.	Area (sq. m)	Remarks
1	101.8	...
2	96.0	...
3	102.0	...
4	101.8	...
5	96.0	...
6	102.0	...
7	101.8	...
8	96.0	...
9	102.0	...
10	101.8	...
11	96.0	...
12	102.0	...
13	101.8	...
14	96.0	...
15	102.0	...
16	101.8	...
17	96.0	...
18	102.0	...
19	101.8	...
20	96.0	...
21	102.0	...
22	101.8	...
23	96.0	...
24	102.0	...
25	101.8	...
26	96.0	...
27	102.0	...
28	101.8	...
29	96.0	...
30	102.0	...

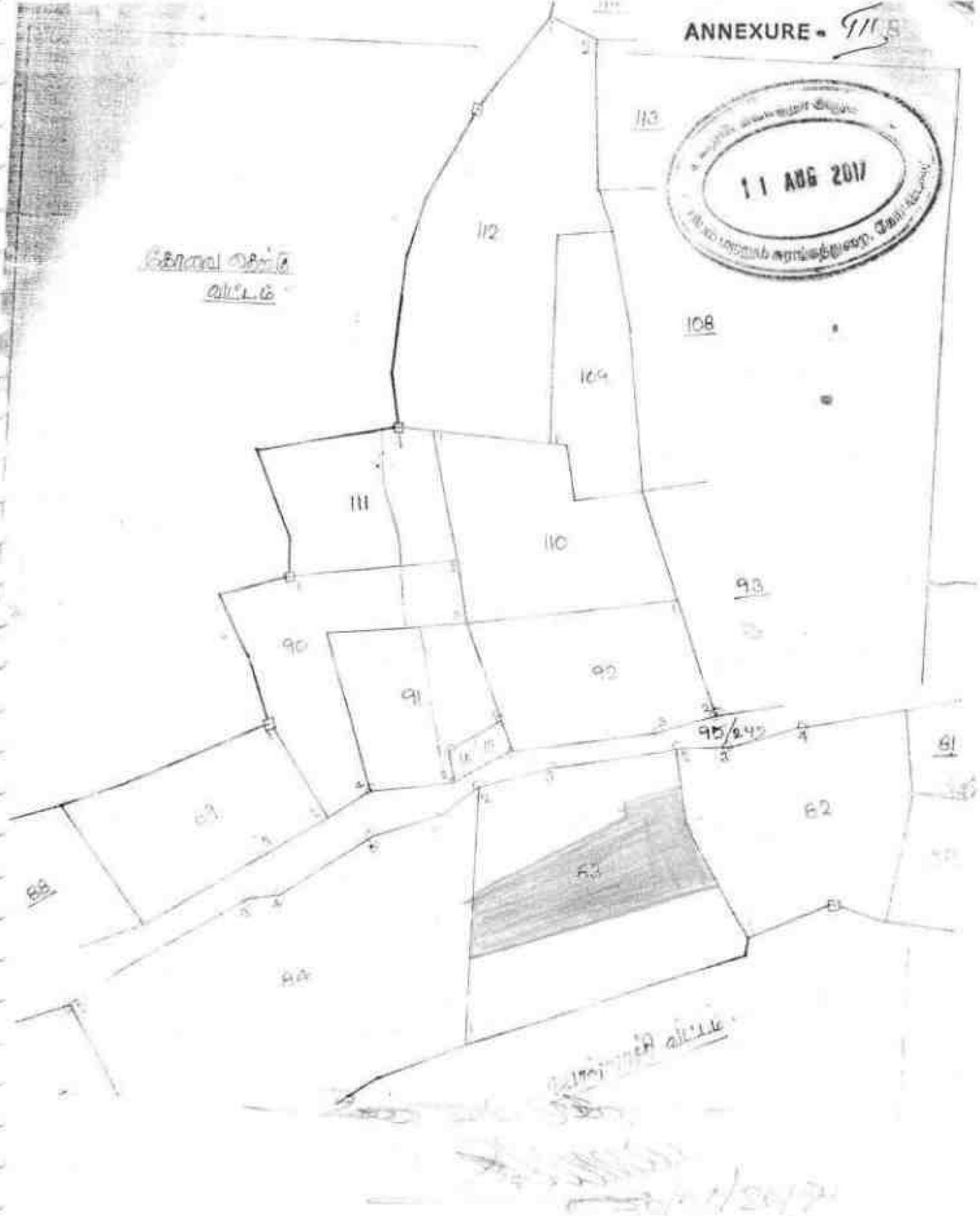
LEASE APPLIED AREA



 30.01.2017



General Office
Office



LEASE APPLIED AREA 



ANNEXURE - IV

தமிழக அரசு
வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கோயம்புத்தூர்

வருவாய் இராமம் : பச்சாபாளையம்



பட்டா எண் : 774

உரிமையாளர்கள் பெயர்

1.	ராமசாயிக் கவுண்டர் -		மகன்		கிள்ளச்சாமி		
	நன்செய்		புன்செய்		மற்றவை		
	பரப்பு	நீர்வை	பரப்பு	நீர்வை	பரப்பு	நீர்வை	
புவ. எண்	உப.சீரிவு	ஹெக்டி - ஏர்	சு - ஸப	ஹெக்டி - ஏர்	சு - ஸப	ஹெக்டி - ஏர்	சு - ஸப
83	1A	--	--	2 - 12.50	4.25	--	--
83	2	--	--	0 - 79.50	1.62	--	--
				2 - 92.00	5.87		

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/00774/90548 என்ற குறிப்பு எண்ணை உள்ளிட செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 03-02-2017 அன்று 11:26:02 AM நேரத்தில் அச்சிடக்கப்பட்டது.
3. கைப்பேசி கோர்பாவி 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

அபதிவேடு விவரங்கள்

ANNEXURE - VI.

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்



1. புல எண்	83	9. மின் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	1A	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	83-1P	11. தீர்வை (ரூ - லெ) 2.00	
4. பகுதி	-	12. பரப்பு (ஹெக்டெர் - ஏ)	2 - 12.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - டா)	4.25
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	774
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.சின்னச்சாமி

குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100548 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்



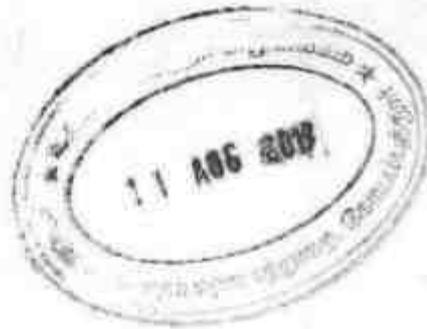
1. புல எண்	83	9. மண் வயன(மும் ரக(மும்)	8 - 3
2. உட்பிரிவு எண்	2	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	2	11. தீர்வை (ரூ - ஹெ)	2.00
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 79.50
5. அரக / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - ஷப்)	1.62
6. நிலத்தின் வகை	பஞ்சை	14. மட்டா எண்	774
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.சின்னச்சாமி

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100545 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



Address
 Haridwar
 Uttarakhand
 India

Phone
 0512-2611111

Facsimile
 0512-2611111

Website
 www.ekm.gov.in

Electronic Surveillance of Electoral Registration Officer
 Lok Sabha Secretariat
 Parliament Building
 New Delhi - 110001
 India

Phone
 011-23030303

Website
 www.ekm.gov.in

This card may be used as an Identity Card
 under different Government Schemes.
 This card is not valid for any other purpose.
 For more information, please contact the
 Election Commission of India.

R. D. Singh



Rescinded up to 18.NOV 1991

P. Swaminathan
Regional Controller of Mines
INDIAN BUREAU OF MINES
Ministry of Steel, Mines & Coal
MADRAS



**CERTIFICATE OF RECOGNITION AS
QUALIFIED PERSON TO PREPARE MINING PLANS**
(Under Rule 22 (c) of Mineral Concession Rules 1960)

Shri *A. JAGANNATHAN* resident
of *5/247, JUNCTION MAIN ROAD, FIVE ROADS, SALEM - 4* son
of *SRI P. NATHINPA GOUNDER* , having given satisfactory
evidence of his qualifications and experience is hereby granted recognition
under Rule 22 (c) of the Mineral Concession Rules, 1960 as a Qualified
Person to prepare Mining Plans.

This registration number is RJP / 123 / 019 / 87 / A

This recognition is valid for a period of two years
ending *19.11.1989*

Place: *MADRAS*
Date: *20.11.1987*

P. Swaminathan
Regional Controller of Mines
Indian Bureau of Mines
MADRAS

17 NOV 1993

17 NOV 1993

P. Manimurthy
Regional Controller of Mines
INDIAN BUREAU OF MINES

G. Jay
Regional Controller of Mines
INDIAN BUREAU OF MINES

Received up to 17-11-2011

S. Prabhakar
Regional Controller of Mines
INDIAN BUREAU OF MINES

17 NOV 1997

Govind
Regional Controller of Mines
INDIAN BUREAU OF MINES

Received up to 17-11-2021

S. Prabhakar
REGIONAL CONTROLLER OF MINES
INDIAN BUREAU OF MINES
CHENNAI REGION

Received up to 17-11-99

M. K. A. Murthy
Regional Controller of Mines
INDIAN BUREAU OF MINES
Ministry of Coal Mines
MADRAS

Received up to 17-11-2001

S. Prabhakar
Regional Controller of Mines,
INDIAN BUREAU OF MINES

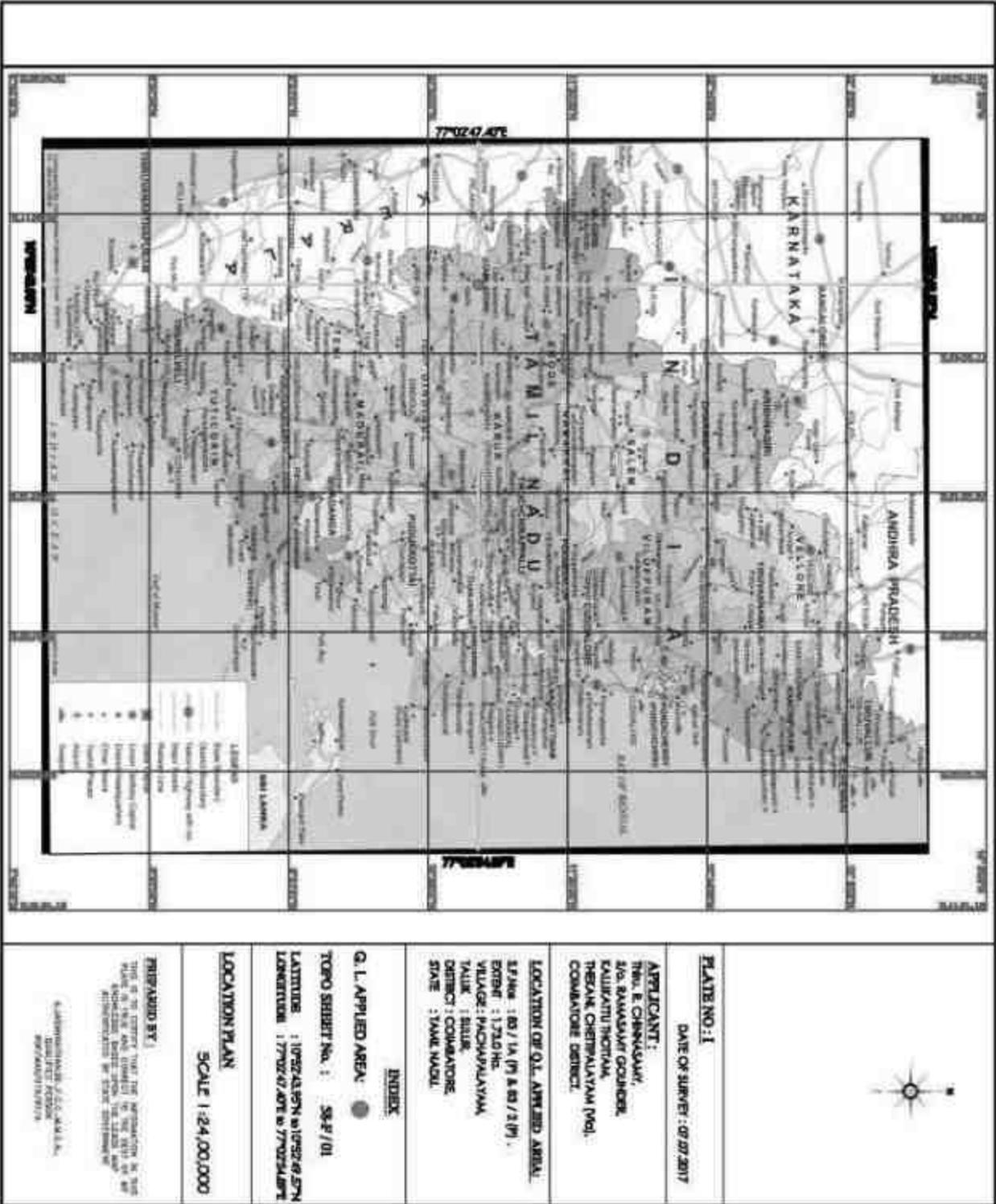


PLATE NO. : I

DATE OF SURVEY : 07.07.2017

APPLICANT :
 Mrs. E. CHANNAYY,
 No. RAJAMANGALU,
 KALURATHI HOUSING,
 THEKALU CHETPALAYAM (Maj),
 COMBATORRE DISTRICT.

LOCATION OF Q.L. APPLIED AREA.
 S.F. No. : 80 / 1A (7) & 81 / 2 (7) .
 PLOT : 1730 Hc.
 VILLAGE : PACHYAPALAYAM,
 TALUK : SILE,
 DISTRICT : COMBATORRE,
 STATE : TAMIL NADU.

INDEX

Q. L. APPLIED AREA: ●

TOPO SHEET No. : SP / 01

LATITUDE : 10°52'42.87"N to 10°52'49.57"N
LONGITUDE : 77°02'47.40"E to 77°02'54.81"E

LOCATION PLAN

SCALE : 1 : 24,00,000

PREPARED BY :

THE Q.L. FORM AND THE Q.L. APPLICATIONS TO THE
 ENGINEER, DISTRICT HOUSING, THE LAND USE & PLANNING
 DEPARTMENT, COMBATORRE DISTRICT.

Authorised Signatory of the Surveyor
 DISTRICT HOUSING
 COMBATORRE DISTRICT



10°58'10.30\"/>

76°57'20.60\"/>

10°47'22.02\"/>

77°08'21.22\"/>



PLATS NO : 1A

DATE OF SURVEY : 07.07.2017

APPLICANT :

THIRU R. CHENNASAMY,
S/O. RAMASAMY GOUNDER,
KALKATTU THOTTAM,
THERKAL CHETPALAYAM (Vrd),
COIMBATORE DISTRICT.

LOCATION OF Q.L. APPLIED AREA:

S.F. No. : 83 / 1A / P1 & 83 / 2 P1 .
EXTENT : 1.730 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULLUR,
DISTRICT : COIMBATORE
STATE : TAMIL NADU.

INDEX

ROADS

Hard surface, all weather
more than two lanes wide.....
Two lanes wide.....
Less than two lanes wide.....

Loose surface

Graded, all weather.
Dry weather, or dirt.....
Track, Trail.....

RAILROADS

Normal gauge (5' 6").....
Narrow gauge.....

BOUNDARIES

International.....
State.....
Landscape airport.....
Landing area.....
Seaplane airport.....
Unclassified stream.....
Buildings or landmark feature.....
Mine.....
Horizontal control point.....
spot elevation in feet.....
swamp, Orchard, vineyard.....
Woods-brushwood.....

**TOPO SKETCH OF QUARRY BASE
APPLIED AREA FOR 100m RADIIUS**

SCALE: 1:10000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLAT IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEGAL MAP
AUTHENTICATED BY STATE GOVERNMENT

A. JAGANNATHAN, M.E., F.C.I., M.A.E.S.,

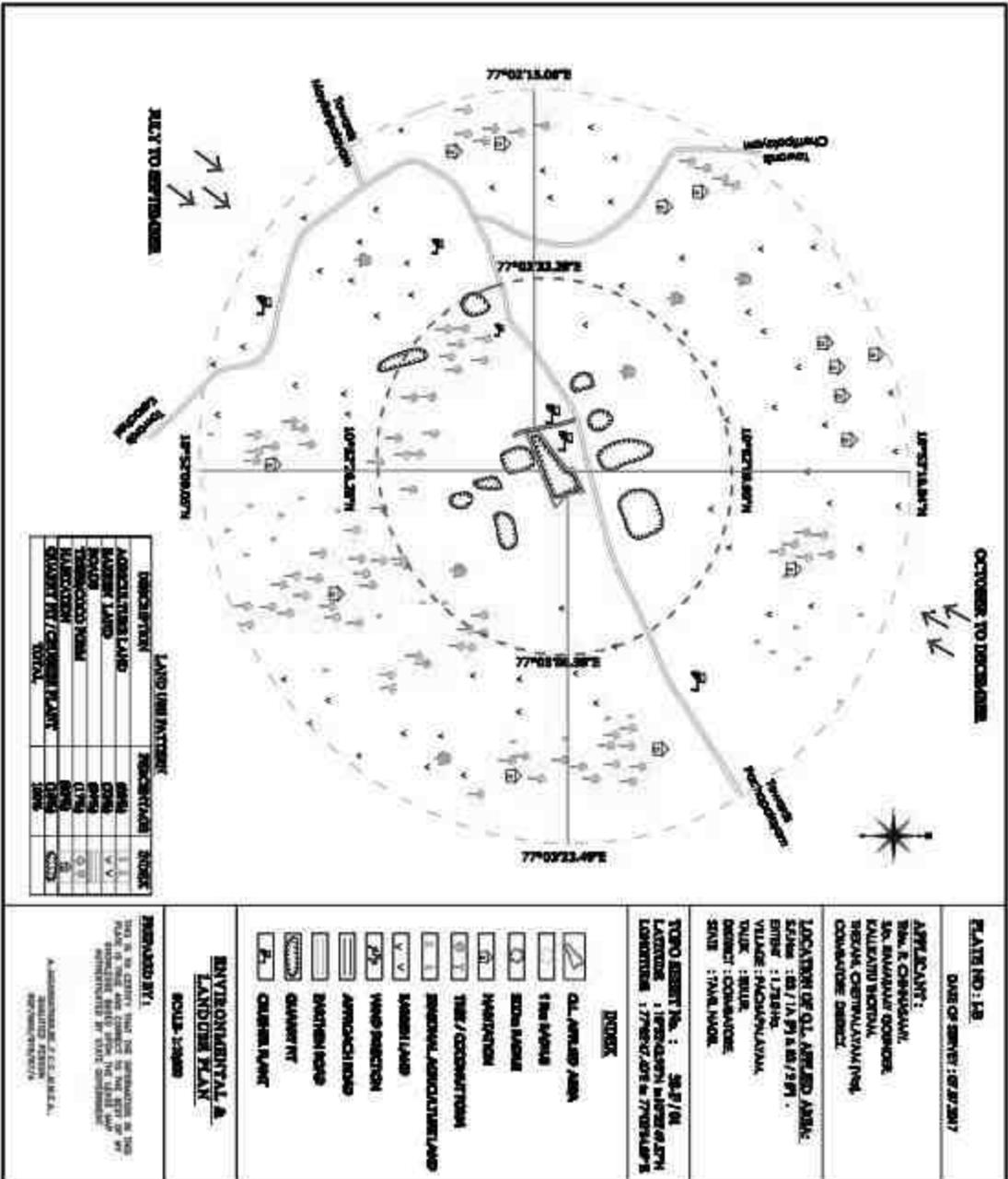
QUALIFIED ENGINEER
HP/MA/5019/87/A

TOPO SHEET No. : 56-F/01

LATITUDE : 10°52'43.95\"/>

100m RADIIUS :

Q.L. APPLIED AREA :



DESCRIPTION	LAND USE INVENTORY	PERCENTAGE	BIOMASS
AGRICULTURAL LAND			
PASTURE LAND			
ROADS			
WATERBODIES			
UNDEVELOPED LAND			
UNDEVELOPED LAND			
TOTAL			

PLATE NO: 128
DATE OF SURVEY: 07/01/2017

APPLICANT:
SRI S. CHANDRAN,
SRI. SIVASUBRAMANIAM,
KALIANATHI SETHUPATI,
SRIKANTH, CHIRUKAVILASAM,
CHANDRASEKAR SURESH.

LOCATION OF Q.L. AREA:
SCALE: 100/1 = 1:1000
EARTH: 1:1000
VILLAGE: MOORUVILASAM,
TALUK: SELLUR,
DISTRICT: COIMBATORE,
STATE: TAMIL NADU.

TORO ESSENTIAL No: 282/18
LATITUDE: 17°02'13.00\"/>

INDEX

- Q.L. AREA
- ROAD
- WATERBODIES
- UNDEVELOPED LAND
- PASTURE
- AGRICULTURE
- WOODS
- OPEN SPACE
- OTHER
- UNDEVELOPED LAND
- WOODS
- PASTURE
- AGRICULTURE
- WOODS
- OPEN SPACE
- OTHER
- UNDEVELOPED LAND

ENVIRONMENTAL & LAND USE PLAN
SCALE: 1:1000

PREPARED BY:
SRI S. CHANDRAN, SRI SIVASUBRAMANIAM, KALIANATHI SETHUPATI, SRIKANTH, CHIRUKAVILASAM, CHANDRASEKAR SURESH.

APPROVED BY:
SRI S. CHANDRAN, SRI SIVASUBRAMANIAM, KALIANATHI SETHUPATI, SRIKANTH, CHIRUKAVILASAM, CHANDRASEKAR SURESH.



MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULE 19 OF TAMILNADU MINOR MINERAL CONCESSION RULES, 1959 & AS PER
AMENDMENT UNDER RULE 41 & 42)
(Lease Period = Five years)

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 1.33.0HA
S.F.NO : 83/1C1A
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE
STATE : TAMILNADU

FOR

APPLICANT

Thiru.S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

PREPARED BY

A.Jagannathan BE., F.C.C., M.M.E.A.,
Qualified Person
RQP/MAS/019/87/A

Old.No.260-B, New No: 17,
Advaita Ashram Road,Alagapuram Post,
Salem - 636 004.

Cell: 94433 56539, E-mail: geothangam@gmail.com,



S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of Rough Stone and Gravel Quarry lease Applied area in S.F.No.83/1C1A over an extent of 1.33.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared by

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

I request the District Collector, Coimbatore to make further correspondence regarding the modification of the Mining Plan with the said qualified person at his following address.

A.Jagannathan, BE.,F.C.C.,M.M.E.A.,
Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.

I hereby undertake that all the modifications, if any made in the mining plan by the Qualified person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of Applicant

S.Arunachalam

Place: Coimbatore

Date: 06.07.2017



S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

DECLARATION OF THE APPLICANT

The Mining Plan in respect of Rough Stone and Gravel Quarry lease Applied area in S.F.No.83/1C1A over an extent of 1.33.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of Applicant

S.Arunachalam

Place: Coimbatore

Date: 06.07.2017



A.Jagannathan BE.,F.C.C.,M.M.E.A.,

Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.

CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions Of Prepared Under Rule 19 Of Tamilnadu Minor Mineral Concession Rules, 1959 & As Per Amendment Under Rule 41 & 42 in the preparation of Mining Plan for Rough Stone and Gravel Quarry lease Applied area in S.F.No.83/1C1A over an extent of 1.33.0Ha in Pachapalayam Village, Suler Taluk, Coimbatore District, Tamilnadu State has been prepared for

Thiru.S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the District Collectorate, Coimbatore, Tamilnadu for such permissions/ exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Qualified Person Signature

A.Jagannathan BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

Place: Salem
Date: 12.07.2017



A.Jagannathan BE.,F.C.C.,M.M.E.A.,

Old.No.260-B, New No: 17,
Advaitha Ashram Road,
Alagapuram Post,
Salem - 636 004.
Cell: 94433 56539.

CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan for Rough Stone and Gravel Quarry lease Applied area in S.F.No.83/1C1A over an extent of 1.33.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared for

Thiru.S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No. 5, IInd Street, Block - AA, Anna Nagar, Chennai-40, Tamilnadu for such permissions/exemptions/relaxations and approvals.

It is also certified that information furnished in the mining plan are true and correct to the best of my knowledge.

Qualified Person Signature

A.Jagannathan BE.,F.C.C.,M.M.E.A.,
RQP/MAS/019/87/A

Place: Salem

Date: 12.07.2017



LIST OF CONTENTS

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4.0	Mining	9
5.0	Blasting	12
6.0	Mine Drainage	14
7.0	Other Permanent Structures	14
8.0	Employment Potential & Welfare Measures	16
	<u>PART-B</u>	
9.0	Environment Management Plan	18
10.0	Mine Closure Plan	24
11.0	Any Other Details Intend to Furnish by the Lessee	26



LIST OF ANNEXURES

S.No.	Description	Annx.no.
1	Copy of Precise area communication letter	I
2	Copy of FMB	II
3	Copy of Village Map	III
4	Copy of Patta	IV
5	Copy of Adangal	V
6	Copy of A-Register	VI
7	Copy of ID Proof	VII
8	Copy of RQP Certificate	VIII

LIST OF PLATES

S.NO	DESCRIPTION	Plate No
1.	LOCATION PLAN	I
2.	TOPOSKECH OF QUARRY LEASE APPLIED AREA COVERING 10KM RADIUS	IA
3.	ENVIRONMENTAL PLAN	IB
4.	KEY PLAN	IC
5.	QUARRY LEASE & SURFACE PLAN	II
6.	TOPOGRAPHY, GEOLOGICAL PLAN & SECTIONS SHOWING YEARWISE DEVELOPMENT & PRODUCTION	III
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1 AUG 2017

**MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY
OVER AN EXTENT OF 1.33.0HA IN PACHAPALAYAM VILLAGE,
SULUR TALUK, COIMBATORE DISTRICT, TAMILNADU**

(PREPARED UNDER RULE 19 OF TAMILNADU MINOR MINERAL CONCESSION RULES, 1959 & AS PER AMENDMENT
UNDER RULE 41 & 42)

INTRODUCTION AND EXECUTIVE SUMMARY

The present Mining Plan and Environmental Management plan is prepared for Thiru.S.Arunachalam, S/o.Saminathan Gounder, 12/85, Kallikattu Thottam, Thekani, Chettipalayam, Coimbatore District.

The applicant applied to quarry Rough stone and Gravel in the S.F.Nos.83/1C1A over an extent of 1.33.0Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District.

The application was processed by the District Collector Coimbatore and passed a precise area communication letter vide **Rc.No. 139/ Mines/2017 dated 05.07.2017** to submit Mining Plan for the approval in Department of Geology and Mining, Coimbatore, Environmental Clearance from the District Level Environment Impact Assessment Authority, Coimbatore.

Short Notes of Mining plan

- a. Village Panchayat - Pachapalayam
- b. Panchayat Union - Sulur
- c. The Total Mineable Reserves are **99,400m³** of Rough stone and **3960m³** of Gravel in the entire area.
- d. The proposed quantity of reserves/ (level of production) for Five year plan period is to be mined is **99,400m³** of Rough stone and **3960m³** of Gravel.
- e. Total extent of the lease applied area = 1.33.0Ha.
- f. Topography of the area = The area exhibits almost plain topography (quarried out pits is observed).
- g. Existing Depth = 12m Depth below ground level.
- h. Proposed Depth of mining = 37m Depth below ground level.
- i. Lease period = Five years.
- j. It is a fresh lease (the area has been quarrying earlier during previous lease period)



- k. Method of mining / level of mechanization.
Opencast semi mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- l. Type of machineries proposed in the quarrying operation.
Excavators attached with rock breaker (Rental Basic)
Jack hammers 30-32mm dia
Tractor mounted compressor (2 jack hammer capacity).
- m. No trees will be uprooted due to this quarrying operation.
- n. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone and Gravel.
- o. There is No Export of this Rough stone and Gravel.
- p. Topo sketch covering 10Km and 1Km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archeological importance, places of worships is marked and enclosed as Plate No IA and IB.
- q. The lease applied area is about 1.33.0Ha bounded by Eight corners; the corners are designated as 1-8 Clock wise from the South Western corner the Co - ordinates for the all the corners are clearly marked in the Topography, Geological Plan and section enclosed as (Plate No-III)
- r. The diagram showing the Mining area, dimensions of the plt, its proposed depth of mining for the lease period are enclosed as Plate No III.
- s. The lease applied area is 10Km away from the interstate boundary, protected area under wild life protection ACT 1972, critically polluted areas as identified by CPCB and notified Eco sensitive areas.
- t. There are no wastages anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 11 employees are deploying in the quarrying operation.
- v. Total Cost of the project is about **Rs.39,22,000/-**



1. GENERAL INFORMATION

1.1 a) Name of the Applicant : Thiru,S.Arunachalam

b) Address of the Applicant (With Phone No and E-mail Address)

Address : S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikattu Thottam,
Thekani, Chettipalayam,
Coimbatore District.

Mobile No : 98650 12699

Pin Code : 641 201

c) Status of the Applicant (Individual / Company / Firm).

The Applicant is an Individual.

1.2 a) Mineral which the Applicant intends to mine

The Applicant intends to quarry Rough stone and Gravel only. No other Minerals observed in the lease applied area.

b) Precise area communication letter details received from the Competent authority of the Government.

The precise area communication letter was received from the District Collector Coimbatore vide **Rc.No. 139/ Mines/2017 dated 05.07.2017** to obtain mining plan and obtain Environmental Clearance from the DEIAA, Tamilnadu.

C) Period of permission / lease to be granted.

The applicant applied permission to quarry Rough stone and Gravel for the period of five years/ The District Collector considered for the Grant of quarry lease for the period of five years.



d) Name and address of the Qualified Person / Authorized person preparing the mining plan.

Name : A.Jagannathan BE.,F.C.C.,M.M.E.A.,
Qualified Person

Address : Regd.off.Old No.260-B, New No. 17,
Advaitha Ashram Road,
Alagapuram, Salem.

Mobile : 94433 56539.

Tele Fax : 0427- 2431989

Registration No : RQP/MAS/019/87/A

Valid up to : 17.11.2021

Email : geothangam@gmail.com

2.0 Location

a) Details of the area with location map

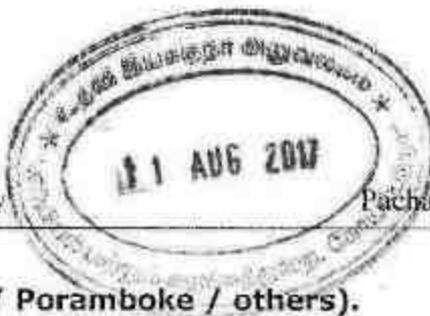
The lease applied area is about 19Km South Western Side of Sulur and 18Km South Eastern of Coimbatore, the lease applied area located along Thenkani Road at the distance of 1Km(Eastern).



Fig. 1.0 Location Map of the Lease applied area

TABLE - 1

District	Taluk	Village	S.F.No.	Area in Ha.
Coimbatore	Sulur	Pachapalayam	83/1C1A	1.33.0Ha
Total Extent				1.33.0Ha

**b) Classification of the area (Ryotwari/ Poramboke / others).**

It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation.

c) Ownership / Occupancy of the applied area (surface right).

It is a Patta land Registered in the name Applicant (Thiru.Arunachalam) vide patta No.336. (Refer Annexure No.IV)

d) Toposheet No. with latitude and longitude.

The lease applied area falls in the Toposheet No.58-F/01 Latitude between 10°52'40.26"N to 10°52'45.20"N and Longitude between 77°02'47.54"E to 77°02'52.29"E on WGS datum-1984. Please refer the Plate No (Plate No I to II).

e) Existence of public road / Railway line, if any nearby and approximate distance.

There is an existing metal road is on the Eastern side, this metal road connecting in the Thenkani village road at a distance of 1Km.

The road from the quarry to main road is already in exists, the same road will be maintained and utilized for transportation besides trees will be planted on the either side of the road to prevent dust and noise to the nearby areas. The area in and around the quarry is devoid of Vegetation and plantation.

The Nearest Rallway line is Coimbatore- Dindigul which is about 1Km from the Western side of the area.

PART - A**3. GEOLOGY AND MINERAL RESERVES.****3.1 Brief description of the Topography and general Geology of the area (with plans).**

The Topography of the area is almost plain terrain covered by the Gravel , the thickness of the Gravel Formation is about 2m, Charnockite formation is noticed followed by the Gravel formation.

The crystalline rocks of the district are derived through a complex evolutionary history during Archaean and Proterozoic times with multiple deformations, anatexis, intrusions and polyphase metamorphic events.



Fig.2.0. Topographical View of lease applied area

The massive Charnockite formation is clearly inferred from the existing pit. The slope is gentle towards North Western side. The altitude of the area is above 390m (Maximum) from MSL.

Water table is found at a depth of 60m in summer and at 57m in rainy seasons. Average annual rainfall is about 900mm during NE monsoon. Archaean forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body trends N30°E- S30°W with dipping towards SE60°.

The general geological sequences of the rocks in this area are given below.

↑ AGE	FORMATION
Recent	- Quaternary weathered formation (Gravel)
	-----Unconformity-----
Archaean	- Charnockite Peninsular Gneiss complex

**3.2 Details of exploration already carried out if any**

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the area. The Rough stone formation is clearly inferred from the existing quarry pit.

3.3 Estimation of Reserves**a) Geological reserves with geological sections on a scale of 1:1000 / 1:500.**

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally Three sections have been drawn, one section drawn Length wise as (X-Y) and another Two sections drawn Width wise as (A-B) & (C-D) to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 and vertical as 1:500 scale (please refer the Geological plan and sections Plate No- III. As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III)

Geological Resources of Rough stone is calculated upto a depth of 37m below the ground level.

Geological Resources are calculated in area method.

Total Extent of the area	=	1.33.0Ha	
Area in square meter	=	1.33.0X 10,000	= 13,300Sqm
Gravel	=	2m below the ground level	
	=	13,300Sqm X 2m Depth	
	=	26,600m³ of Gravel.	
Rough Stone formation	=	35m below the ground level.	
	=	13,300Sqm X 35m Depth below the Ground level.	
	=	4,65,500m³ of Rough stone upto a depth of 35m.	
Total Geological Resources of Rough Stone	:	4,65,500m ³	
Total Geological Resources of Gravel	:	26,600m ³	

**Already Excavated.**

The area has been quarried in earlier the existing pit dimensions are follow
Table-2

Pit.No	Length Max in (m)	Width Max in (m)	Depth Max in (m)
I	90m	83m	12m

Available Mineable Reserves.

The available mineable reserves are calculated after leaving 7.5m & 10m safety distance to the adjacent patta lands, Approach Road and Bench loss.

Table-3
MINEABLE RESERVES

Section	Bench	Length in m	Width in m	Depth in m	Mineable Reserves of Rough Stone in m ³	Gravel in m ³
XY-AB	I	22	90	2		3960
	II	21	85	5	8925	
	III	20	75	5	7500	
	IV	25	65	5	8125	
	V	20	55	5	5500	
	VI	15	45	5	3375	
	VII	10	35	5	1750	
	VIII	5	25	5	625	
TOTAL					35800	3960
XY-CD	IV	57	72	5	20520	
	V	52	62	5	16120	
	VI	47	52	5	12220	
	VII	42	42	5	8820	
	VIII	37	32	5	5920	
	TOTAL					63600
GRAND TOTAL					99400	3960

The available mineable reserves have been computed as **99,400m³** of Rough stone and **3960m³** of Gravel Formation at the rate of 100% recovery upto depth of 37m below the ground level for a period of Five years.

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4.0 Mining.**4.1 Method of mining (opencast / underground).**

Open cast Semi-Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act - 1952.

4.2 Mode of working (mechanized, semi mechanized, manual).

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Semi- Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining.

4.3 Proposed Bench Height and Width.

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

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Mining Plan for Rough Stone and Gravel Quarry

Pachrapalayam Village

4.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.)

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and leveling of low lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tipper to the needy customers.

The Composite plan, Development plan and section indicating the Pit layout, Green belt development are shown in Plate No-III.

Year wise development and Production table

Table-4

YEARWISE RESERVES								
Section	Year	Bench	Length in m	Width in m	Depth in m	Volume in m ³	Recoverable Reserves of Rough stone in m ³	Gravel in m ³
XY-AB	I	I	22	90	2			3960
		II	21	85	5	8925	8925	
		III	20	75	5	7500	7500	
		IV	25	65	5	8125	8125	
		TOTAL						24550
XY-CD	II	IV	57	72	5	20520	20520	
		TOTAL						20520
XY-AB	III	V	52	62	5	16120	16120	
		V	20	55	5	5500	5500	
TOTAL						21620		
XY-CD	IV	VI	15	45	5	3375	3375	
		VI	47	52	5	12220	12220	
		TOTAL						15595
XY-AB	V	VII	42	42	5	8820	8820	
		VIII	37	32	5	5920	5920	
		VII	10	35	5	1750	1750	
		VIII	5	25	5	625	625	
		TOTAL						17115
GRAND TOTAL							99400	3960

The Recoverable Reserves have been computed as **99,400m³** of Rough stone and **3960m³** of Gravel.

L. Prasad
 ASSISTANT DIRECTOR
 DEPARTMENT OF GEOLOGY & MINING
 COIMBATORE DISTRICT



4.5 Machineries to be used.

a) For Mining

It is a fresh lease (the area has been quarrying earlier during previous lease period),

1. Excavator of 0.90Cbm bucket capacity (with Rock breaker attachment).
Excavator will be used on rental basis.
2. Tractor mounted compressor attached with Jackhammer (2 jack hammer capacity).

b) Loading Equipment

The quarried out Rough stone will be loaded manually, if huge volume of Rough stone accumulates, the same will be loaded with the help of hired excavator.

c) Transportation (includes within the mine and mine to destination).

The Rough stone will be transported from the quarry pit to needy customer sites/Crushing unit by the 10/20Tons capacity tippers.

4.6 Disposal of Overburden/Waste

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas, this will be done only after obtaining permission and paying necessary selgniorage fees to the Government. The excavated rough stone will be directly loaded into tipper to the needy customers.

4.7 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations.

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for five years, the ultimate pit limit (dimension) at the end of lease period is given below.

Table-5

Description	Length (Max) (m)	Width (Avg) (m)	Depth (Max) (m)
Conceptual	101m	92m	37m



Afforestation has proposed on the 7.5m safety barrier by planting neem trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF Norms. Please refer plat No.III & IV.

It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

5.0 BLASTING

5.1 Blasting pattern

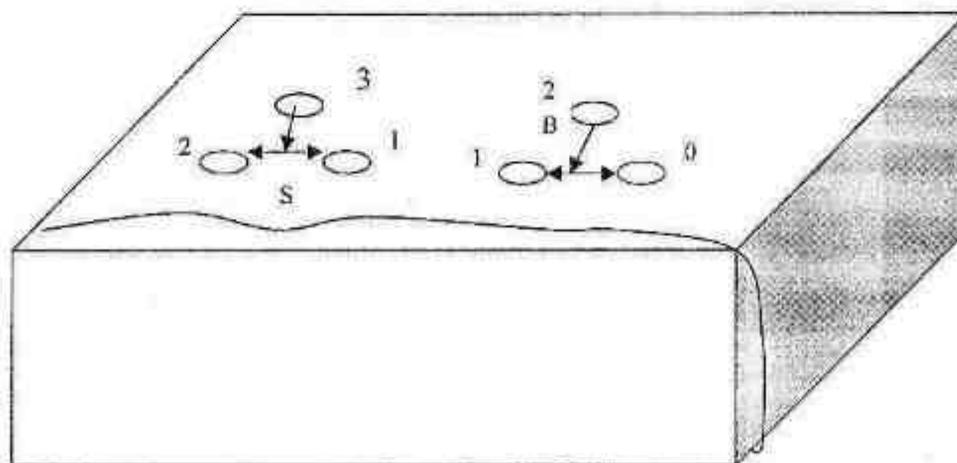
The quarrying operation is proposed to carried out by Semi Mechanized Opencast Method in conjunction with conventional method of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

Drilling and Blasting pattern

Drilling and blasting parameters are as follows

- Depth of Each hole : 1.2m-1.5m
- Diameter of hole : 30-32mm
- Spacing between holes : 0.5m
- Burden for hole : 0.5m
- Pattern of hole : Zigzag
- Inclination of holes : 80°from horizontal
- Use of delay detonators : 25millisecond delays.
- Detonating fuse : "Detonating" Cord
- Hole pattern : Staggered In two to three rows

BLASTING PATTERN DRAWING



- Spacing (S) : 0.5m
- Burden (B) : 0.5m
- Delay Detonators : 0,1,2 ...

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5.2 Type of explosives to be used

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed..

5.3 Measures proposed to minimize ground vibration due to blasting

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.

Delay detonators

Delay blasting (milli second delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantage of delay blasting are

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day

No of Holes	= 66Holes
Yield	= 198Tons
Powder factor	= 6 tons/Kg of explosives
Total explosive required	= 33Kg-Slurryexplosives
Charge/ hole	= 0.5 Kg
Blasted at day time	= 5-6p.m(whenever required)

5.4 Storage and safety measures to be taken while blasting

They will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies will have experienced blaster. He will explode in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. Magazine is available at the quarry site to temporarily store the explosives.



6.1 Mine Drainage

6.1.1 Depth of water table (based on nearby wells and water bodies).

The water table in the area is 60m BGL in summer season and 57m in Rainy season which is observed from the nearby wells and the data obtained from existing Government and private boreholes.

Table -6

S.No	Type	Distance & Direction	Location
1	Bore Well	280m SE side	10°52'37.68"N 77°02'59.53"E

Hence the ground water will not be affected in any manner due to the quarrying operation during the entire life period.

6.2 Arrangements and places where the mine water is finally proposed to be discharged.

Quarry operations are confined well above the water table during the entire lease period.

If water is encountered at due to rain water and seepage, the same will be pumped out by 5HP water pumps to the afforestation and Green belt development areas. Besides the water will also be used for dust suppression on haul roads during Haulage of machineries.

7.0 OTHER PERMANENT STRUCTURES (also shown in the map)

7.1 Habitations/ Villages natham.

There is no houses within the radius of 500m from the periphery of the lease applied area.

7.2 Power Lines (HT/LT)

There is no LT/ HT line within the radius of 100m from the periphery of the quarry site.

7.3 Water bodies (river, pond, lake, odai, canal,etc.,).

No major water bodies like river, pond, lake odai etc., water bodies within the radius of 500m.

7.4 Archaeological / historical monuments.

There is no Archaeological / historical monuments within 500m radius from the area.



7.5 Road (NH, SH others)

The nearest National Highway (NH - 209) Coimbatore- Dindigul is about 4Km from the South Western side of the area.

The State Highway (SH-163) Palladam - Chettipalayam is 4Km from the North Western side of the area.

7.6 Places of worships.

There is no places of worships within the radius of 500m.

7.7 Reserved forest / forest / social forest / wild life sanctuary etc.

There is no Reserved forest / forest / social forest / wild life sanctuary etc., within radius of 500m.

SALIENT FEATURES

S. No.	Salient Futures Present around site	Prescribed safety distance	Actual Distance from the site
1.	Railways, Highways, Reservoirs or Canal	50m	Railway line - 1Km (Coimbatore- Dindigul) Western side. Highways- National Highway (NH-209) Coimbatore- Nagapattinam 4Km from South Western side of area. Reservoir - No reservoir within 10Km radius. Canal- No canals within 1Km Radius.
2.	Village Road	10m	Thenkani vilage road is 1Km from the Eastern side of the area.
3.	Habitation / Village	300m	There is no houses within the radius of 500m. Actual distance are clearly marked in the Plate No I-B.

S.No	Name of the Village	Approximate distance & Direction from lease applied area
1.	Pachapalayam	3Km - NE
2.	Karacheri	2Km - SE
3.	Mayileripalayam	3Km - W
4.	Chettipalayam	4Km - NW



Mining Plan for Rough Stone and Gravel Quarry

Pochampalayam Village

4.	Adjacent Patta Land	7.5m	North - S.F.No.83/1A East - S.F.No.83/1C1B South - S.F.No.Pollachi Taluk West - S.F.No. 84 7.5m safety distance has been maintained from the patta land.															
5.	Housing area, EB line (HT & LT Line)	50m	There is no houses within the radius of 500m, LT Line - There is no LT Line within the radius of 100m.															
6.	Boundaries of the permitted area	7.5m & 10m	The boundaries of the permitted areas is as follows <table border="1"> <thead> <tr> <th>Direction</th> <th>S.F.No</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>83/1A</td> <td>Patta Land</td> </tr> <tr> <td>East</td> <td>83/1C1B</td> <td>Patta Land</td> </tr> <tr> <td>South</td> <td>Pollachi Taluk</td> <td>Village</td> </tr> <tr> <td>West</td> <td>84</td> <td>Patta Land</td> </tr> </tbody> </table>	Direction	S.F.No	Classification	North	83/1A	Patta Land	East	83/1C1B	Patta Land	South	Pollachi Taluk	Village	West	84	Patta Land
Direction	S.F.No	Classification																
North	83/1A	Patta Land																
East	83/1C1B	Patta Land																
South	Pollachi Taluk	Village																
West	84	Patta Land																
7.	Reserve forest / protected area / ECO sensitive area	10Km	No reserved forest within the radius of 10Km.															

8. EMPLOYMENT POTENTIAL & WELFARE MEASURES

8.1 Employment potential (skilled, semi skilled, un skilled).

The following manpower are proposed to carry out the day-to-day quarrying activities aimed at the proposed production target and also to comply with the statutory provisions of the metalliferous mines regulations, 1961.

a. Skilled labour

Mine Foreman/

Permit Mines Manager : 1

Excavator operator : 2

Jack hammer operator : 4

Blaster/ mate : 1

b. Semi-skilled :

watchman : 1

c. Unskilled- helper : 2

Total : 11

Allowing 10% absenteeism the man power would be around 10, The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations.

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It is been ensured that the labour will not be employed less than 16 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

8.2 Welfare Measures

a) Drinking Water

Packaged drinking water is available from the nearby approved water vendors in Karacheri which is about 2Km from the South Eastern side of the area. Drinking water shall be readily available at conveniently accessible points during the whole of the working shift.

b) Sanitary Facilities

Hygienic modern Sanitary facilities will be constructed with in the quarrying area as permanent structure and it will be maintained periodically.

c) First aid facility

First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 2Km South Eastern in Karacheri the competent and Statutory foreman/ permit manager will be in charge of first aid.

d) Labour Health

Periodically medical check up related to occupational health safety will be conducted to all the workers in Applicant own cost.

e) Precautionary safety measures to the labourers.

All the quarry workers will be provided with safety equipments like helmets, Mine Goggles, Ear plugs, Ear muffs, Dust mask, reflector jackets and Safety Shoes as personal protective device as per the specification approved by Director of mines safety. Periodically medical check up will be conducted for all workers for any mine health related problems. Proper training and induction will be given by qualified and experienced safety officer to all employees about the safe and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically to carry out the quarrying operations scientifically to safe guard the men machinery and mineral and to create awareness of conventional opencast quarrying operations.

**PART - B****9. ENVIRONMENT MANAGEMENT PLAN****9.1 Existing Land use pattern**

The quarry lease applied area exhibits almost plain topography. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

LAND USE TABLE-7

Description	Present area in (Ha)	Area at the end of Lease period (Ha.)
Area under quarrying	0.74.7	0.92.9
Infrastructure	0.01.0	0.01.0
Roads	0.02.0	0.02.0
Green Belt	Nil	0.12.0
Unutilized	0.55.3	0.25.1
Grand Total	1.33.0	1.33.0

9.2 Water Regime

Ground water occurrence in this area is 60m depth. The quarrying operation is proposed upto a depth of 37m below the ground level, Hence the quarry operation will not be affected by the ground water.

9.3 Flora and Fauna:

There are no trees observed in the area. Thorny bushes, Neem and Palm are found in around the area. No plants of botanical interest or animals of zoological interest are noticed. There are no cultivation, plantation or agriculture found within the vicinity of the area.

9.4 Climatic Conditions

The area receives rainfall of about 900/per annum and the rainy season is mainly from Oct - Jan during North East, monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

9.5 Human settlement

There is no houses within the radius of 500m, There are few villages located in this area within 5km radius, the approximate distance and population are given below.



Table - 8

S.No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Pachapalayam	3.0Km - NE	200
2.	Karacheri	2.0Km - SE	400
3.	Mayileripalayam	3.0Km - W	500
4.	Chettipalayam	4.0Km - NW	1000

Basic human welfare Amenities such as Health Center, Schools, Communication Facilities, and Commercial Centers etc are available at Kinathukadavu located at a distance of 7km on the South Western side of the area.

9.6 Plan for air, dust suppression

The air quality will be affected by the Suspended Particulate Matter (SPM) this will be generated by the blasting, jack hammer drilling, Loading and unloading during the quarrying Rough stone quarry operation.

The following Mitigations measures will be carried out

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be planted on the exposed surface.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigation Measures will be carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around **Rs 52,000/year.**

9.7 Plan for Noise level control.

The noise level increased due to the excavation, Drilling, Blasting, Transportation and Blasting.

Engineering Noise control:

Noise will be created due to the usage of Machinaries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low - noise equipments for the Rough stone quarry operation.
- Modifications of older equipments
- Implementation of effective preventive maintenance which reduces noise more than 50%.



- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly inducted to move the vehicle during the transportation not exceed 40 km per hour.
- Sentries with flags & whistle will posted in village junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and 1.5m depth will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse only will be used for rough stone. Hence, ground vibration and noise pollution will be minimal and restricted within the quarry workings.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs 2,000/Year.**

9.8 Environmental impact assessment statement describing impact of mining on the next five years.

The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MoEF. It is B2 Category mine. The estimated budget would be around **Rs. 7,10,000/-**

9.9 Proposal for waste management

There is no waste in this Rough stone and gravel quarry operation.

9.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.)

In the mining plan only a maximum depth of 37m has been envisaged as workable depth for safe & economic mining during the lease period. After quarry reaches the ultimate depth 37m and the end of the lease period fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle. There is no proposal for reclamation and rehabilitation. the barbed wire fencing cost would be around **Rs 1,00,000/-**



9.11 Programme of afforestation (indicate extend, number, name of species to be afforested).

The 7.5m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of neem trees will be planted in a phased manner as described below.

Table - 9

Year	No. of trees proposed to be planted	Survival %	Area to be covered Sq.m	Name of the species	No. of trees expected to be grown
I	30	80%	240	Neem/ Casuarina	24
II	30	80%	240	Neem/ Casuarina	24
III	30	80%	240	Neem/ Casuarina	24
IV	30	80%	240	Neem/ Casuarina	24
V	30	80%	240	Neem/ Casuarina	24

Nearly 1200Sq.m area is proposed to use under afforestation by planting 30 Nos of neem/ Casuarina trees every year with an anticipated survival rate of 80%. (Please refer Plate No.III). The estimated budget for plantation and maintenance of Green belt development would be around **Rs. 30,000/-** for the period of five years.

9.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the entire quarrying period.

Table -10

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs 3,80,000/-** for the period of five years.

Project cost / investment	
i) Land cost	It is patta land, the present land cost is about Rs.2,00,000/ Ha, hence the total land cost is calculated about Rs.2,66,000/-
ii) Machinery to be used	Excavators attached with rock breaker (Rental Basic) = Rs.10,00,000/- Tractor mounted compressor with jack Hammer and loose tools. = Rs.6,00,000/- Tippers (10/20Tons Capacity) 1No = Rs.10,00,000/-



Mining Plan for Rough Stone and Gravel Quarry Pachapalayam Village

iii)	Refilling / Fencing	Fencing will be constructed around the quarry pit to prevent the inherent entry of public and cattles cost would be around Rs.1,00,000/-
iv)	Laboureres shed	Labour sheds will be constructed as semi permanant structure. The cost would be around Rs 50,000/-
v)	Sanitary facility	Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around Rs. 50,000/-
vi)	Others items	First aid room & accessories = Rs. 50,000/-
vii)		<p>A. Fixed asset :-</p> <p>Land cost = Rs 2,66,000/-</p> <p>Labour shed = Rs 50,000/-</p> <p>First aid room and accessories = Rs 50,000/-</p> <p>Sanitary facilities = Rs 50,000/-</p> <p>Total Fixed asset = Rs 4,16,000/-</p> <p>B. Operational Cost :-</p> <p>Machinaries to be used = Rs 26,00,000/-</p> <p>Fencing cost = Rs 1,00,000/-</p> <p>Total operational cost =Rs. 27,00,000/-</p>
(a) Expenditure		
i)	Drinking water facility for the laborers	Packaged drinking water is being provided for all the labours. Drinking water is readily available at conveniently accessible points during the whole of the working shift the cost would be around Rs.1,00,000/-
ii)	Sanitary arrangement,	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around Rs.50,000/- for the entire period.
iii)	Safety kits	All the Safety kits such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided by the applicant own cost the cost would be around Rs. 50,000/-



Mining Plan for Rough Stone and Gravel Quarry

Pachapalayam Village

	iv) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around Rs.1,00,000/-
	v) Afforestation etc.	Afforestation program will be carried out in the boundary barrier the cost would be around Rs.30,000/- for the five year plan period.
Total Cost		= RS. 3,30,000/-

		<p>C. EMP Cost :- (Per year)</p> <p>Air Quality monitoring = Rs. 52,000/-</p> <p>Water Quality Sampling = Rs. 18,000/-</p> <p>Noise Monitoring = Rs. 2,000/-</p> <p>Ground vibration test = Rs. 4,000/-</p> <p>Total Cost = Rs. 76,000/-</p> <p>Total EMP Cost for the five year period is Rs. 3,80,000/-</p> <p>Total Expenditure and EMP cost (Including EMP Studies) = Rs. 7,10,000/-</p> <p>A+B+C=</p> <p>A. Fixed asset cost = Rs 4,16,000/-</p> <p>B. Operational cost = Rs 27,00,000/-</p> <p>C. EMP Cost = Rs 7,10,000/-</p> <p>Total Project Cost (A+B+C) = Rs 38,26,000/-</p> <p>The applicant ensures to involve corporate social responsibilities (CSR) like providing note books to nearby school, providing drinking water facilities to the nearby villages etc., at around 2.5% from the total project cost the cost would be around Rs 96,000/-</p> <p>Total Project cost = Rs. 38,26,000/-</p> <p>CSR Cost (2.5%) = Rs. 96,000/-</p> <p>Total cost = Rs. 39,22,000/-</p> <p>(The Total cost of the project including EMP Cost is Rupees Thirty Nine lakhs and Twenty Two Thousand only)</p>
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10. MINE CLOSURE PLAN

10.1 Steps proposed for phased restoration, reclamation of already mined out areas.

There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles. After treating the water the same will be utilized for nearby agriculture purpose to the nearby agriculture lands.

10.2 Measures to be under taken on mine closure as per Act & Rules.

Measure will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarry pit will be fenced by barbed wire to prevent inherent entry of public and cattle.

The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture lands.

10.3 Mitigation Measure To Be Undertaken For Safety And Restoration / Reclamation Of The Already Mined Out Area.

Air quality: (Air quality will be degrade due to the drilling, blasting, mining operation and transportation).

Mitigation measures:

Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air. Air quality will be monitored periodically as per norms.

NOISE AND VIBRATION: (The noise will be formed due to the drilling, blasting, loading and movement of Machineriies.

Mitigation measures :

The applicant proposed to carry out the plantation all along the boundary to prevent Noise besides wet drilling will be practiced to prevent dust. All the machineriies will be maintained in good conditions as per RTO and TNPCB Norms to prevent Noise, Smoke and vibration.

11 AUG 2017

WATER REGIME :**Mitigation Measures :**

The quarry operation proposed upto a depth of 37m below the ground level for the five year period, the proposed depth is well above the water table (Summer in 60m and rainy seasons in 57m), hence the water table will not be affected in any.

The seepage and rain water will be drained out from the pit by the 5H.P. motor pump and will be discharged through filter media to boundary barrier for afforestation and excess water will be sprayed on haul roads to prevent dust propagation in to the atmosphere. The rough stone quarry will not produce any harmful toxic effluence in the form of solid liquid or gas.

HUMAN HEALTH & SAFETY: Dust will be limited due to the mine operation.

All the labours has been provided with safety equipment's like helmet, Safety Goggles, Ear muff, Hand Glouse, safety jacket, safety belt, and Mine boots etc., at Applicant own cost, As per the specifications of Director of mines safety. The competent qualified person foreman/Permit Mines Manager will provide first aid and will take care of small & minor injuries. If any accident happens, the victim will be taken to the nearby hospital by the Applicant van which is always kept in the mines office. The hospital is about 2.0Km In Karacheri (SE).



Mining Plan for Rough Stone and Gravel Quarry

Pachapalayam Village

11. ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:

This Mining plan for Rough stone (Charnocklite) and Gravel is under rule 19 of Tamilnadu Minor Mineral concession rules, 1959 & as per amendment under rule 41 & 42. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

Prepared by

A. Jagannathan BE., F.C.C., M.M.E.A.,
RQP/MAS/019/87/A

Place : Salem
Date : 12.07.2017

ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT



From

Thiru.T.N.Hariharan, I.A.S.
District Collector,
Coimbatore District,
Coimbatore - 18.

Thiru.S.Arunachalam,
S/o.Saminathan Gounder,
12/85, Kallikaatuthottam,
Thegani, Chettipalayam,
Coimbatore.

R.C. 139/Mines/2017 Dated 05.07.2017

Sir,

Sub Mines & Minerals - Minor Mineral - Coimbatore District -
Sulur Taluk - Pachapalayam Village - over an extent of
1.33.0 hectares of patta land - Survey No. 83/1C1A -
Application preferred by Thiru.S.Arunachalam for quarrying
Roughstone and gravel - precise area communicated -
Mining Plan called for - Reg.

- Ref
1. Quarry lease application dated 22.02.2017 preferred by Thiru.S.Arunachalam, S/o.Saminathan Gounder, 12/85, Kallikaatuthottam, Thegani, Chettipalayam, Coimbatore.
 2. This office letter even number dated 14.03.2017 addressed to the Revenue Divisional Officer, Coimbatore South.
 3. Revenue Divisional Officer, Coimbatore South Letter RC.No.1085/2017/A2 dated 21.04.2017.
 4. Inspection report of the Assistant Director, Geology and Mining, Coimbatore dated 16.06.2017.
 5. G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.

The quarry lease application preferred by Thiru.S.Arunachalam, S/o.Saminathan Gounder, 12/85, Kallikaatuthottam, Thegani, Chettipalayam, Coimbatore for the grant of quarry lease for quarrying rough stone and gravel over an extent of 1.33.0 hectares of patta land in SF No. 83/1C1A in Pachapalayam Village, Sulur Taluk, Coimbatore District has been taken up for consideration under rule 19 of Tamilnadu Minor Mineral Concession Rules, 1959 and the following precise area is considered for the grant of quarry lease for a period of 5 years with the conditions stipulated below.

Taluk	Village	SF.Nos	Total Extent (in hect.)	Extent applied for (in Hect.)
Sulur	Pachapalayam	83/1C1A	1.33.0	1.33.0
		Total	1.33.0	1.33.0

1. A safety distance of 10 meters should be provided for the approach road passing on the Western side of the applied area and safety distance of 7.5 meters should be provided all along the boundary of the area applied for lease.
2. No hindrance shall be caused to the Crusher units situated on the Northern side of the applied area.
3. While carry out quarry operation, no hindrance shall be caused to the adjoining patta lands and road.
4. The applicant should fence the area with barbed wire before execution of lease deed.
5. Environmental clearance should be obtained from the District Level Environmental Impact Assessment Authority in respect of the subject area as per the orders of the Hon'ble Supreme court dated 27.02.2012 in IA No 12-13/2011 in SLP (C No 19629/2009 and office memorandum No.L 11011/47/2011-1A II (M) dated 18.05.2012 of the Ministry of Environment and Forest.

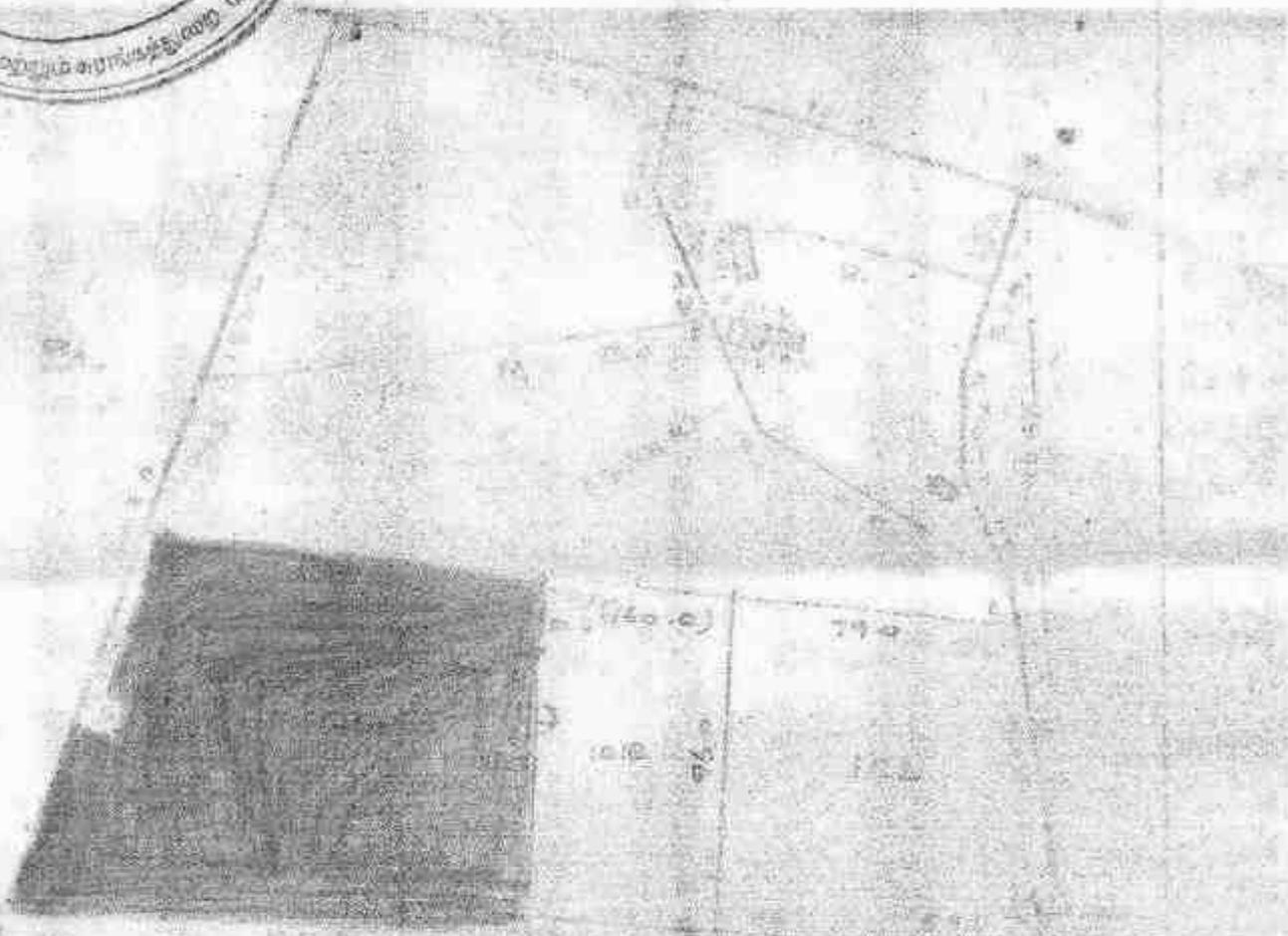
In this regard you are directed to prepare a mining plan for the above mentioned area through the help of Recognized Qualified Person (RQP) and to submit the same before the Assistant Director for getting approval within in a period of 90 days from the date of receipt of this letter as required under rule 41 of Tamilnadu Miner Mineral Concession Rules, 1959.

Sd./xxx
District Collector,
Coimbatore.

//True Copy/By Order//


For District Collector,
Coimbatore



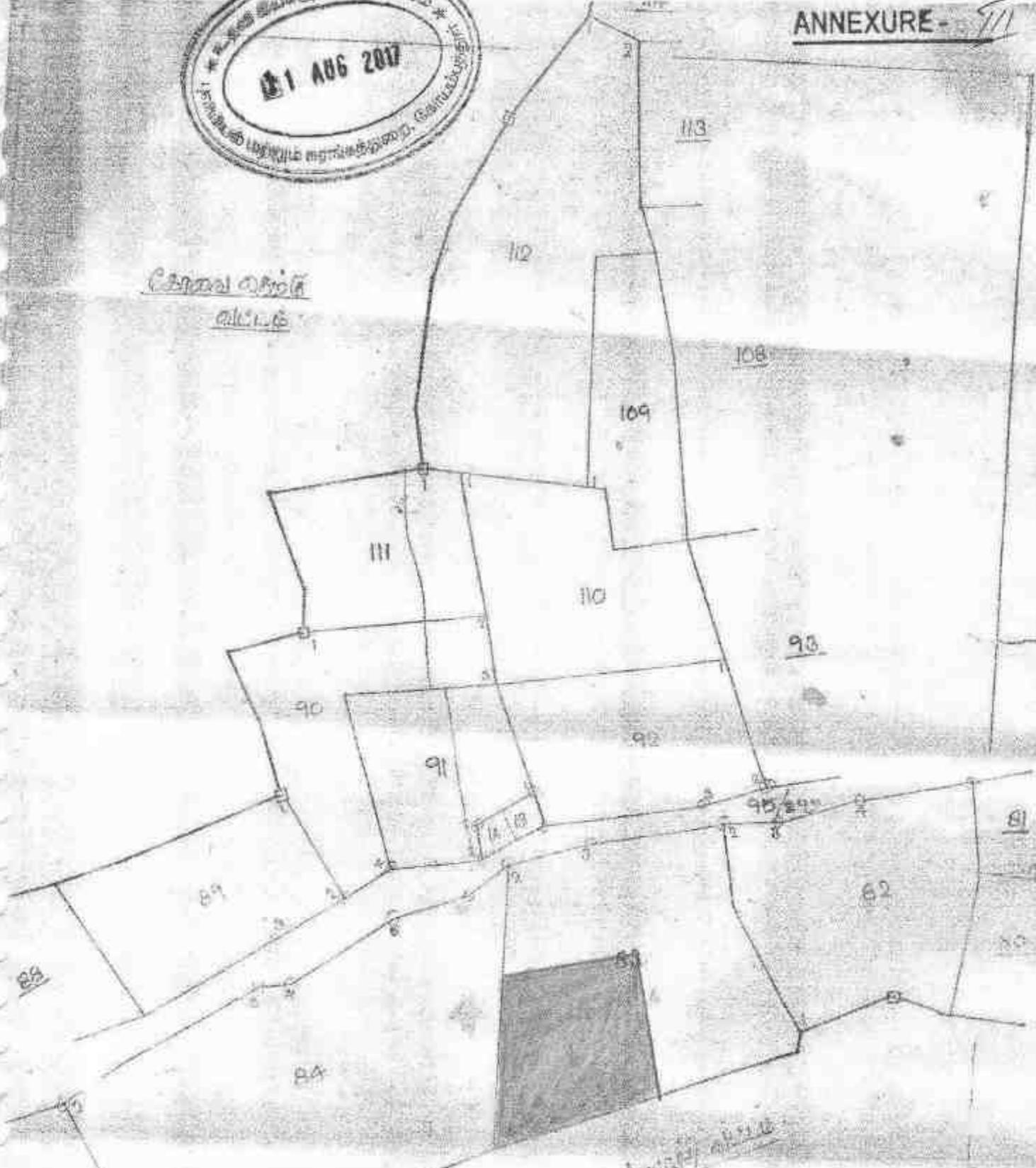


Handwritten notes in Malayalam script, including the number '156' and some illegible text.

LEASE AREA [shaded box]



Central Office
M.L.G.



Handwritten signature and date 01/01/2017

LEASE AREA



ANNEXURE - 9V 12370



தமிழக அரசு
வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : துலூர்

வருவாய் கிராமம் : பச்சபாளையம்

பட்டா எண் : 336

உரிமையாளர்கள் பெயர்

S.	சாமிநாதன்	மகன்		அருணாசலம்			
		நன்செய்		புன்செய்		மற்றவை	
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல.எண்	உ.பிரிவு	ஹெக்டை - ஏர்	ரூ - பை	ஹெக்டை - ஏர்	ரூ - பை	ஹெக்டை - ஏர்	ரூ - பை
83	101A	--	--	1 - 33.00	2.66	--	--
				1 - 33.00	2.66		

குறிப்பு 2 :	
	1. மேற்கண்ட தகவல் / சான்றுகூறு நுகர் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. தீவிரநாள் தாங்கள் http://eservices.tn.gov.in என்று இணைய தளத்தில் 12/10/2017 00336/50562 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
	2. இது தகவல்கள் 06-02-2017 அன்று 10:45:11 AM நேரத்தில் அச்சுக்கப்பட்டது.
	3. கைப்பேசி கேமராவில் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சூட்டியார்க்கவும்.

R. Rajasekar
செயலாளர்

CP109 கள்ளப்பாளையம் தொடக்க
வேளாண்மை கூட்டுறவு கடன் சங்கம்

ANNEXURE - VI

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்

1. புல எண்	83	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	1C1A	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	83-1C1P	11. தீர்வை (சூ - செற)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டோ - ஏர்)	1 - 33.00
5. அரசு / ரயத்துவாரி ரயத்துவாரி		13. மொத்த தீர்வை (சூ - பை)	2.68
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	336
7. பாசன ஆதாரம்	-	15. குறிப்பு	"
8. இரு பொருள்	1	16. பெயர்	1.அருணாசலம்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் பின் பதிவேட்டிலிருந்து பெறப்படலாம். இவ்வாறு தகவல் <http://eservices.tn.gov.in> என்ற இணைய இடத்தில் 100562 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



सं. नॉ. १६
Renewed up to 16 NOV 1991

P. Srinivasan
Regional Controller of Mines
INDIAN BUREAU OF MINES
Ministry of Steel, Mines & Coal
MADRAS

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS

(Under Rule 22 (c) of Mineral Concession Rules 1960)

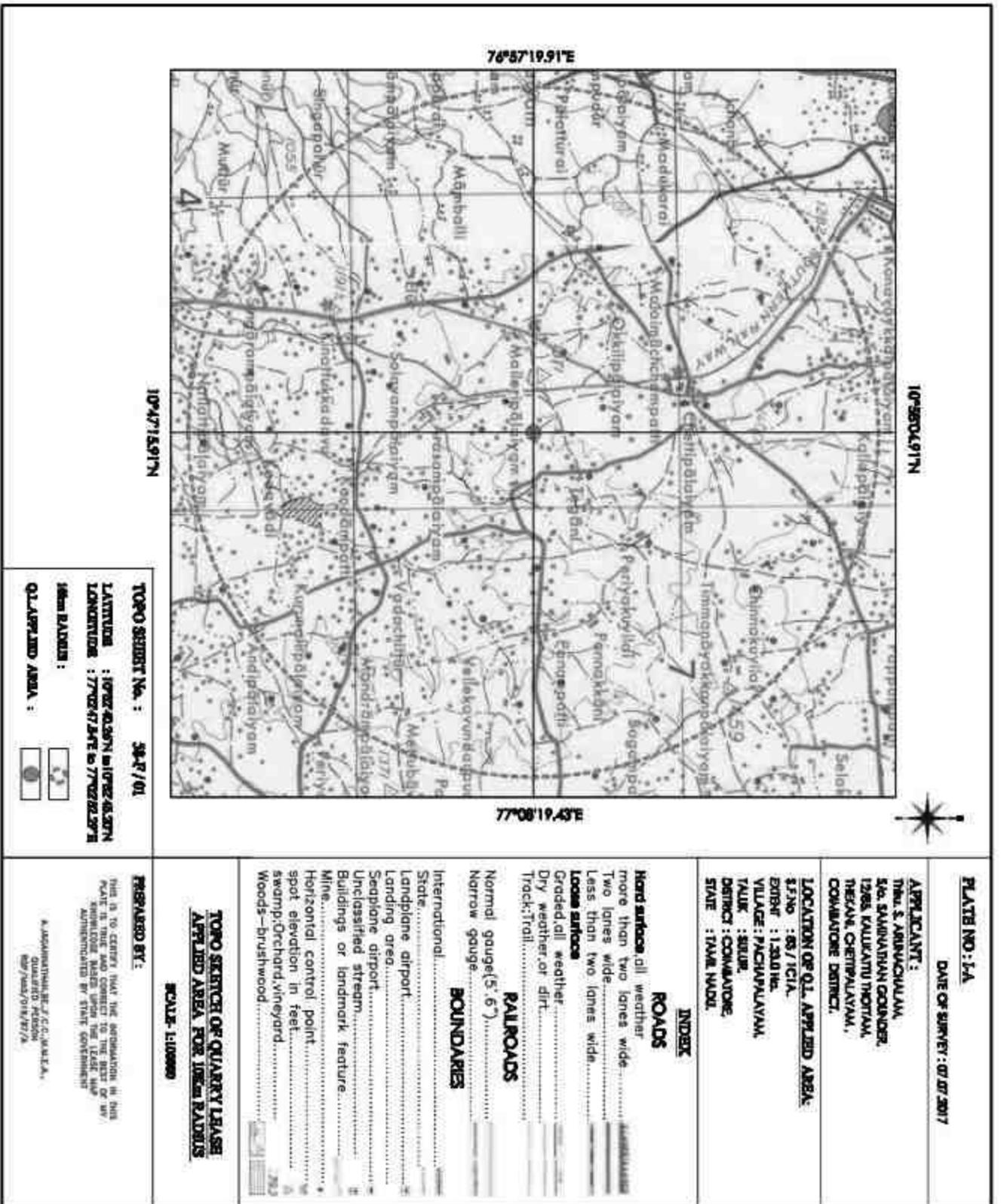
Shri A. JAGANATHAN resident
of 5/247, JUNCTION MAIN ROAD, FIVE ROADS, SALEM - 5 son
of SHRI P. SRIHARAN, OWNER , having given satisfactory
evidence of his qualifications and experience is hereby granted recognition
under Rule 22 (c) of the Mineral Concession Rules, 1960 as a Qualified
Person to prepare Mining Plans.

His registration number is 224 / MS / 019 / 87 / A

This recognition is valid for a period of two years
ending 19.11.1989

Place: MADRAS
Date: 26.11.1987

P. Srinivasan
Regional Controller of Mines
Indian Bureau of Mines
MADRAS



10°36'04.91"N

76°57'19.91"E

77°08'19.43"E

10°47'15.91"N

PLATS NO.: 1A

DATE OF SURVEY : 07.07.2017

APPLICANT :
 THE S. ARUNACHALAM,
 S/o. S. ANANDHAN GOUDER,
 1288, KALKATTU NORTHAM,
 THEKKE, CHETTIPALAYAM,
 COMBANTORE DISTRICT.

LOCATION OF Q.L. APPLIED AREA:
 S.T.NO : 65/1C1A,
 EDRBT : 1,301ha,
 VILLAGE : PACHUPALAYAM,
 TALUK : SULLUR,
 DISTRICT : COMBANTORE,
 STATE : TAMIL NADU.

INDEX

ROADS

Hard surface all weather
 more than two lanes wide
 Two lanes wide
 Less than two lanes wide

Loose surface

Graded all weather
 Dry weather or dirt
 Track: Trail

RAILROADS

Normal gauge (5' 6")
 Narrow gauge

BOUNDARIES

International
 State
 Landplane airport
 Landing area
 Seaplane airport
 Unclassified stream
 Buildings or landmark feature
 Mine
 Horizontal control point
 spot elevation in feet
 swamp: Orchard, vineyard
 Woods—brushwood

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR LINES RADDS

SCALE: 1:100000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

A. ANANDHARATHAN, B.E., J.C.C., I.M.A.E.A.,
 QUARTER MASTER
 No/1004/018/81/1A

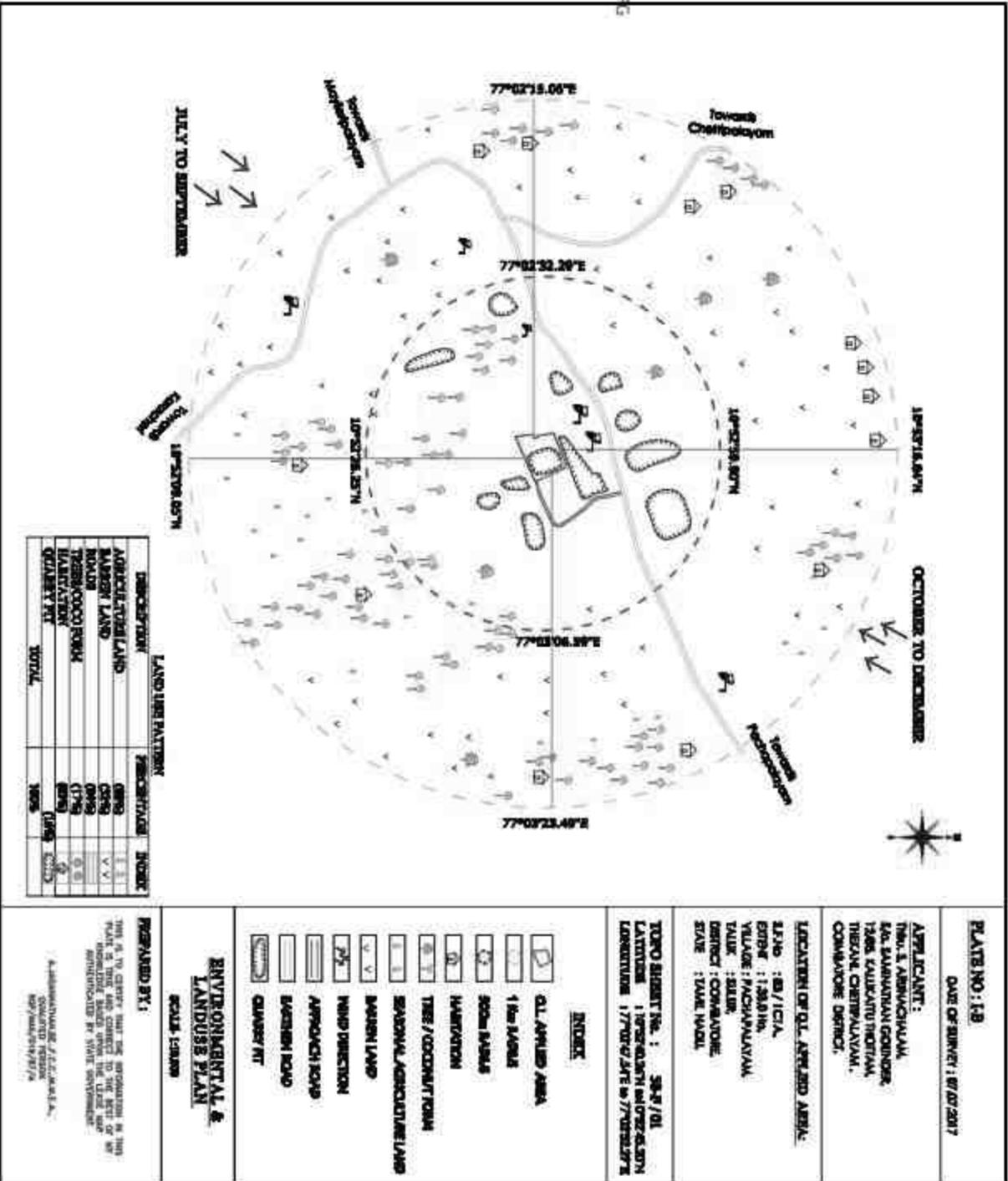
TOPO SHEET No. : 34-R/01

LATITUDE : 10°36'04.91N to 10°36'04.91N
LONGITUDE : 77°08'19.43E to 77°08'19.43E

Scale RADIUS :

Q.L. APPLIED AREA :





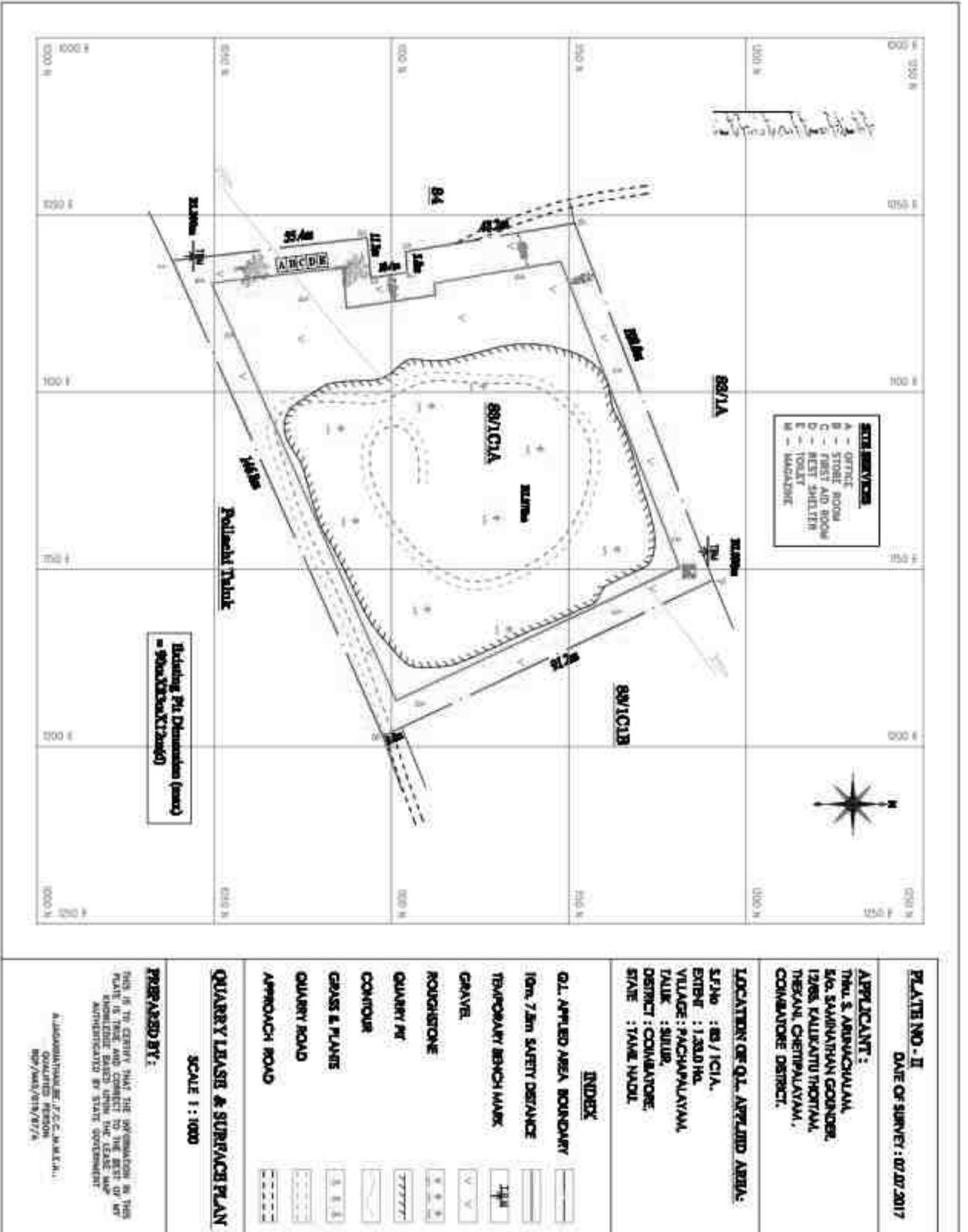


PLATE NO. - II
DATE OF SURVEY : 07.07.2017

APPLICANT :
THIRU S. ARIVANACHALAM,
S/O. SIVANATHAN GOUDER,
12/68, KALKATTUR HORTAM,
THEYAN, CHETTIYALAYAM,
COMBATORE DISTRICT.

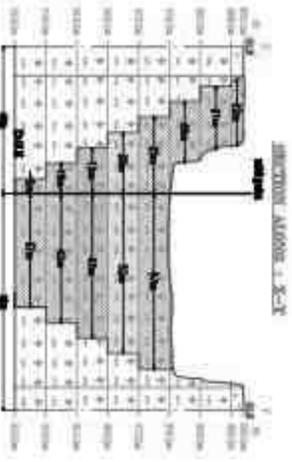
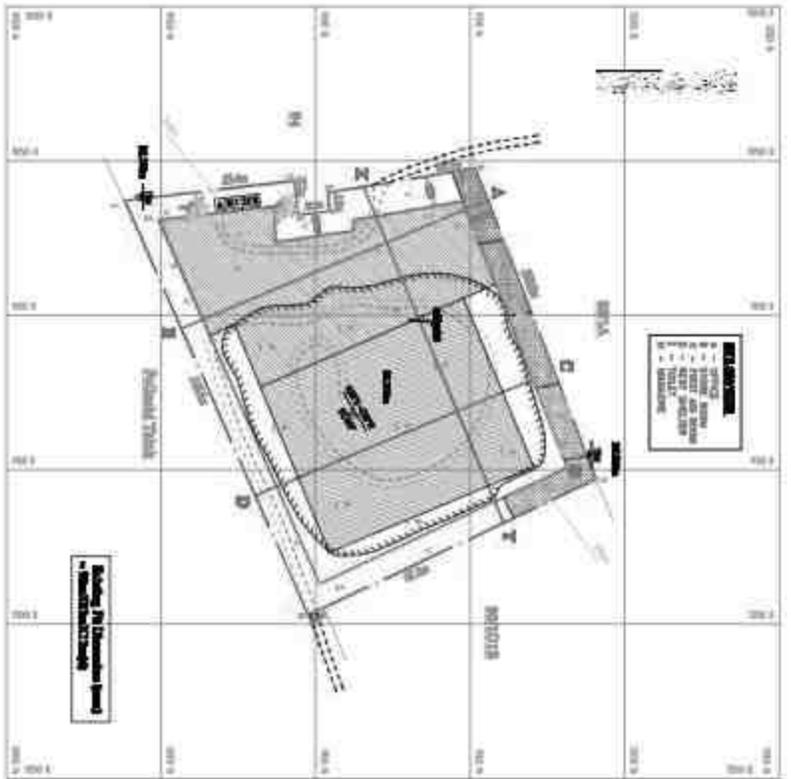
LOCATION OF Q.L. APPLIED AREA:
S.P.No : 88 / 101A,
EXTN : 1,2&3 Hs,
VILLAGE : PACHAYPALAYAM,
TAUK : SULLUR,
DISTRICT : COMBATORE,
STATE : TAMIL NADU.

INDEX

Q.L. APPLIED AREA BOUNDARY	—————
10m 7.5m SAFETY DISTANCE	—————
TEMPORARY BENCH MARK	TM
GRAVE	V V
ROUGHSTONE	XXXX
QUARRY PIT	TTTT
CONTOUR	———
GRASS & PLANTS	|||||
QUARRY ROAD	—————
APPROACH ROAD	—————

QUARRY LEASE & SURFACE PLAN
SCALE 1 : 1000

PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.
A. JAYAKANTHAN, B.E., J.C.C., M.A.E.C.M.,
QUALIFIED PERSON
DP/MS/419/17/A



LAND USE ESTIMATE

REQUIREMENT	REQUIREMENT AREA OF THE SITE IN HECTARES	REQUIREMENT AREA OF THE SITE IN SQUARE METERS
OFFICE BUILDING	0.113	10,000
STORE BUILDING	0.113	10,000
NEW BUILDING	0.113	10,000
EXISTING BUILDING	0.113	10,000
EXISTING ROAD	0.113	10,000
TOTAL	0.452	40,000



- 1. Proposed Office Building
- 2. Proposed Store Building
- 3. Proposed New Building
- 4. Proposed Existing Building
- 5. Proposed Existing Road

- 1. Proposed Office Building
- 2. Proposed Store Building
- 3. Proposed New Building
- 4. Proposed Existing Building
- 5. Proposed Existing Road

PLANNING - R

DESCRIPTION:
Site & location of the building, its surroundings, and the proposed building footprint.

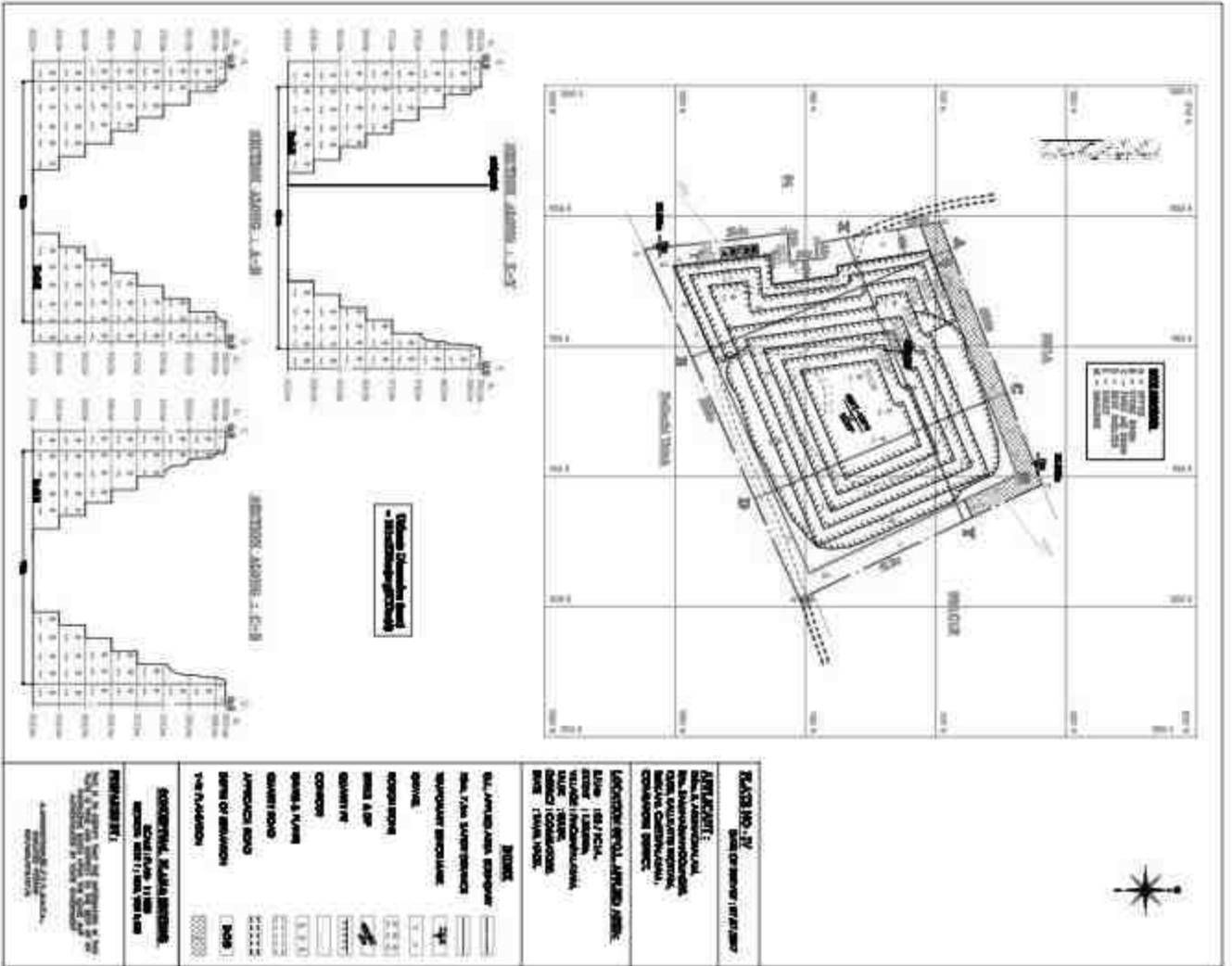
LOCATION:
The building is located on the site of the existing building, which is situated on the National Trunk Road.

ROADS:
The site is bounded by the National Trunk Road to the north and south, and by the existing building footprint to the east and west.

UTILITIES:
The site is served by the existing water supply and sewerage systems.

ENVIRONMENT:
The site is located in an urban area and is surrounded by existing buildings and roads.

CONCLUSION:
The proposed building footprint is suitable for the site and is in accordance with the planning requirements.





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TEST REPORT

TEST REPORT NO.: ETS/656-21/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-1, CORE ZONE
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg.
 Packing Condition : SEALED
 Packed in : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	—	7.39	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µ/cm	310	IS 14767
3	Texture	—	Clay Loam	IS 2720 (Part-4)
4	Sand	%	34.9	IS 2720 (Part-4)
5	Silt	%	36.6	IS 2720 (Part-4)
6	Clay	%	28.5	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	46.7	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	0.79	IS 2386 (Part-4)
9	Porosity	%	36.3	IS 13030
10	Calcium (Ca)	mg/kg	176.1	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	24.6	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	29.6	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.47	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.73	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	163.7	BS.1377-3
16	Total Soluble Sulphate	%	138	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	43.2	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	0.89	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	146.2	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.87	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.26	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	1.63	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	0.95	BS.1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	46.8	IS 2720 (Part-24)

Page 1 of 1

****End of Test Report****
For Enviro-Tech Services

FOR ENVIROTECH SERVICES

CHECKED BY

AUTHORIZED SIGNATORY

Format No ETS/LAB/TR-12; Issue No. 05; Date 01.04.2019; Amend. No. 04 Date 01.04.2019

Note:-

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TEST REPORT

TEST REPORT NO: ETS/650-22/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-2, CORE ZONE
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg.
 Packing Condition : SEALED
 Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	7.55	IS 2720 (Part-2b)
2	Electrical Conductivity (EC)	µs/cm	580	IS 14767
3	Texture	---	Clay Loam	IS 2720 (Part-4)
4	Sand	%	35.5	IS 2720 (Part-4)
5	Silt	%	34.1	IS 2720 (Part-4)
6	Clay	%	30.4	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	47.3	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	1.04	IS 2385 (Part-4)
9	Porosity	%	38.6	IS 13030
10	Calcium (Ca)	mg/kg	173.2	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	30.1	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	36.5	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.77	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.84	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	178.2	BS 1377-3
16	Total Soluble Sulphate	%	162	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	41.8	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	1.18	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	165.2	ETS/STP/SOIL-16
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	1.10	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.18	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	2.13	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	1.24	BS 1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	45.5	IS 2720 (Part-24)



*****End of Test Report*****
For Enviro-Tech Services

[Signature]
Sd/- Humraj

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Format No ETS/LAB/TR-12, Issue No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019

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TEST REPORT

TEST REPORT NO.: ETS/650-23/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
Analysis Start Date : 25.05.2021
Analysis End Date : 31.05.2021
Sampling Done By : ETS STAFF
Sampling Description : SOIL
Sampling Location : S-3, CORE ZONE
Sampling Method : ETS/STP/SOIL-01
Sample Quantity : 2.0 Kg
Packing Condition : SEALED
Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	8.23	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	540	IS 14767
3	Texture	---	Clay	IS 2720 (Part-4)
4	Sand	%	24.1	IS 2720 (Part-4)
5	Silt	%	34.3	IS 2720 (Part-4)
6	Clay	%	41.6	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	51.5	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	0.94	IS 2386 (Part-4)
9	Porosity	%	34.6	IS 13030
10	Calcium (Ca)	mg/kg	183	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	35	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	40.2	ETS/STP/SOIL-16
13	Zinc (Zn)	mg/kg	1.14	ETS/STP/SOIL-18
14	Boron (µs B)	mg/kg	0.92	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	183	BS 1377 -3
16	Total Soluble Sulphate	%	155.3	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	44.2	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	1.32	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	189	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.64	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.40	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	2.36	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	1.37	BS 1377 -3
27	Cation Exchange Capacity (CEC)	meq/100g	46.8	IS 2720 (Part-24)

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TEST REPORT

TEST REPORT NO.: ETS/650/24/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-4, CORE ZONE
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg.
 Packing Condition : SEALED
 Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	7.95	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	435	IS 14787
3	Texture	---	Clay Loam	IS 2720 (Part-4)
4	Sand	%	36.8	IS 2720 (Part-4)
5	Silt	%	27.9	IS 2720 (Part-4)
6	Clay	%	35.3	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	42.1	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	1.10	IS 2586 (Part-4)
9	Porosity	%	28.7	IS 13030
10	Calcium (Ca)	mg/kg	156	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	31.5	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	34.3	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.89	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.67	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	170	BS 1377-3
16	Total Soluble Sulphate	%	162.8	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	38.1	ETS/STP/SOIL-18
18	Phosphorus (PO4)	mg/kg	1.27	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	220	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.55	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.53	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	2.08	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	1.21	BS 1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	38.1	IS 2720 (Part-24)

Page 1 of 1

****End of Test Report****



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TEST REPORT

TEST REPORT NO.: ETS/650-25/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-5, OTHAKALMANDAPAM
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg
 Packing Condition : SEALED
 Packed in : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	7.88	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	564	IS 14767
3	Texture	---	Clay Loam	IS 2720 (Part-4)
4	Sand	%	38.0	IS 2720 (Part-4)
5	Silt	%	33.0	IS 2720 (Part-4)
6	Clay	%	29.0	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	40.6	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	0.83	IS 2386 (Part-4)
9	Porosity	%	31.2	IS 13030
10	Calcium (Ca)	mg/kg	162	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	30.7	ETS/STP/SOIL-05
12	Manganese (Mn)	mg/kg	37.	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.65	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.80	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	156.7	BS 1377 -3
16	Total Soluble Sulphate	%	181.2	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	34.2	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	1.55	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	183.7	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.83	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.34	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	2.01	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	1.17	BS 1377 -3
27	Cation Exchange Capacity (CEC)	meq/100g	49	IS 2720 (Part-24)



[Signature]
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TEST REPORT

TEST REPORT NO.: ETS/550-26/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-6, CHETTIPALAYAM
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg.
 Packing Condition : SEALED
 Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	7.81	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	420	IS 14767
3	Texture	---	Clay Loam	IS 2720 (Part-4)
4	Sand	%	41.2	IS 2720 (Part-4)
5	Silt	%	31.6	IS 2720 (Part-4)
6	Clay	%	27.2	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	46.1	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	1.01	IS 2386 (Part-4)
9	Porosity	%	30.1	IS 13030
10	Calcium (Ca)	mg/kg	162.2	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	24	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	28	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.90	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.51	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	163	BS 1377-3
16	Total Soluble Sulphate*	%	1.47	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	40.3	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	0.73	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	1.77	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.76	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.16	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	1.39	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	0.81	BS 1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	36.7	IS 2720 (Part-24)

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TEST REPORT

TEST REPORT NO.: ETS/660-27/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-7, VADASITHUR
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg
 Packing Condition : SEALED
 Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	---	7.55	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	437	IS 14767
3	Texture	---	Loam	IS 2720 (Part-4)
4	Sand	%	45.1	IS 2720 (Part-4)
5	Silt	%	38.7	IS 2720 (Part-4)
6	Clay	%	16.2	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	42.5	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	0.92	IS 2386 (Part-4)
9	Porosity	%	27.3	IS 13030
10	Calcium (Ca)	mg/kg	166	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	23.8	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	24.6	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.81	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.68	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	183	BS 1377-3
16	Total Soluble Sulphate	%	150	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	39.7	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	0.71	ETS/STP/SOIL-18
19	Total Nitrogen (N)	mg/kg	163	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.68	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	2.69	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	1.68	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	0.98	BS 1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	44.5	IS 2720 (Part-24)

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For End of Test Report

FOR ENVIRO-TECH SERVICES

CHECKED BY

Format No ETS/LAB/TR-12, Issue No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019

AUTHORIZED SIGNATORY

Note:-

1. This test report shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the laboratory.
2. The sample shall be destroyed after 15 days & Biological / Perishable sample shall be destroyed immediately after issue of test report.
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Plot No. 1/32, South Side G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

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TEST REPORT

TEST REPORT NO.: ETS/850-28/05/2021

DATE OF REPORT: 31.05.2021

SOIL SAMPLE ANALYSIS REPORT

Name And Address-of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
 Analysis Start Date : 25.05.2021
 Analysis End Date : 31.05.2021
 Sampling Done By : ETS STAFF
 Sampling Description : SOIL
 Sampling Location : S-8, PONNAKKANI
 Sampling Method : ETS/STP/SOIL-01
 Sample Quantity : 2.0 Kg.
 Packing Condition : SEALED
 Packed In : POLY BAG

S. No.	Test Parameter	Unit	Result	Test Method
1	pH	—	7.83	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	465	IS 14767
3	Texture	—	Silt Clay Loam	IS 2720 (Part-4)
4	Sand	%	61.2	IS 2720 (Part-4)
5	Silt	%	14.3	IS 2720 (Part-4)
6	Clay	%	24.5	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	44.3	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	1.10	IS 2386 (Part-4)
9	Porosity	%	28.5	IS 13030
10	Calcium (Ca)	mg/kg	159	IS 2720 (Part-23)
11	Magnesium (Mg)	mg/kg	22.4	ETS/STP/SOIL-08
12	Manganese (Mn)	mg/kg	25.5	ETS/STP/SOIL-18
13	Zinc (Zn)	mg/kg	0.93	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	0.62	ETS/STP/SOIL-18
15	Chloride (Cl)	mg/kg	173	BS 1377-3
16	Total Soluble Sulphate	%	118	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	30	ETS/STP/SOIL-18
18	Phosphorus (PO ₄)	mg/kg	0.86	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	185	ETS/STP/SOIL-15
20	Cadmium (Cd)	mg/kg	<0.005	ETS/STP/SOIL-18
21	Chromium (Cr)	mg/kg	<0.005	ETS/STP/SOIL-18
22	Copper (Cu)	mg/kg	<0.005	ETS/STP/SOIL-18
23	Lead (Pb)	mg/kg	0.84	ETS/STP/SOIL-18
24	Iron (Fe)	mg/kg	1.76	ETS/STP/SOIL-18
25	Organic Matter (OM)	%	1.29	IS 2720 (Part-22)
26	Organic Carbon (OC)	%	0.75	BS 1377-3
27	Cation Exchange Capacity (CEC)	meq/100g	40.5	IS 2720 (Part-24)

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End of Test Report

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TEST REPORT

TEST REPORT NO.: ETS/650-29/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer

: ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM
VILLAGE ROUGH STONE AND GRAVEL CLUSTER
QUARRIES

Date of Sampling

: 20.05.2021

Analysis Start Date

: 26.05.2021

Analysis End Date

: 30.05.2021

Sampling Done By

: ETS STAFF

Sampling Description

: SURFACE WATER

Sampling Location

: SW1 - GURUNALLIPALAYAM TANK

Sampling Method

: ETS/STP/WATER-02

Sample Quantity

: 2.0 + 0.5 Ltr

Packing Condition

: SEALED

Packed in

: P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Test Method
1	Colour	Hazen	<10.0	IS:3025 (Pt-4)
2	Odour	Agreeable	Agreeable	IS:3025 (Pt-5)
3	pH	---	7.48	IS:3025 (Pt-11)
4	Conductivity (25 °C)	us/Cm	1784.0	APHA-2510
5	Turbidity	NTU	8.0	IS:3025 (Pt-10)
6	Total Dissolve Solid (TDS)	mg/L	1231.0	IS:3025 (Pt-16)
7	Total Hardness(CaCO ₃)	mg/L	432.4	IS:3025 (Pt-21)
8	Calcium (Ca)	mg/L	86.8	IS:3025 (Pt-40)
9	Magnesium (Mg)	mg/L	49.5	IS:3025 (Pt-45)
10	Total Alkalinity (CaCO ₃)	mg/L	365.8	IS:3025 (Pt-23)
11	Chloride (Cl)	mg/L	165.6	IS:3025 (Pt-32)
12	Sulphate (SO ₄)	mg/L	83.7	IS:3025 (Pt-24)
13	Iron (Fe)	mg/L	<0.01	IS:3025 (Pt-53)
14	Chlorine (Residual)	mg/L	< 0.02	APHA 4500:(Cl)-B
15	Fluoride (F)	mg/L	0.80	IS:3025 (Pt-60)
16	Nitrate (NO ₃)	mg/L	28.0	APHA 4500:(NO ₃)-B
17	Copper(Cu)	mg/L	<0.1	APHA-3111(B)
18	Manganese (Mn)	mg/L	< 0.01	APHA-3120B
19	Mercury (Hg)	ug/L	<0.001	APHA-3114C
20	Cadmium(Cd)	mg/L	<0.001	APHA-3111 (B)

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For Enviro-Tech Services



FOR ENVIRO-TECH SERVICES

CHECKED BY

Humra
Quality Manager

AUTHORIZED SIGNATORY

(Format No. ETS/LAB/TR-10, Issue No. 05, Date 01.04.2019, Amst. No. 04 Date 01.04.2019)

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TEST REPORT

TEST REPORT NO.: ETS/650-29/05/2021

DATE OF REPORT: 31.05.2021

S. No.	Test Parameter	Unit	Result	Test Method
21	Selenium, (Se)	mg/L	< 0.01	APHA-3120B
22	Aluminium, (Al)	mg/L	<0.01	APHA-3120B
23	Lead, (Pb)	mg/L	<0.001	APHA-3111 (B)
24	Zinc, (Zn)	mg/L	<0.01	APHA-3111 (B)
25	Chromium, (Cr)	mg/L	< 0.01	APHA-3120B
26	Boron, (B)	mg/L	< 0.01	APHA 4500: (B)-C
27	Mineral Oil	mg/L	<0.001	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	<0.001	APHA-5530
29	Anionic Detergent, (MBAS)	mg/L	<0.01	APHA 5540-C
30	Cyanide, (CN)	mg/L	<0.05	APHA 4500: (CN)-D
31	Biological Oxygen Demand (BOD at 27°C for 3 day)	mg/L	8.4	APHA-5220 (B)
32	Chemical Oxygen Demand (COD)	mg/L	12.0	APHA-5220 (B)
33	Dissolved Oxygen (DO)	mg/L	7.0	APHA 4500: (O)-C
34	Total Coliform	MPN/100ml	110	IS:1622-1981
35	E. Coli	Coli/100ml	90	IS:1622-1981
36	Barium, (Ba)	mg/L	< 0.01	APHA 3120B
37	Ammonia, (as Total NH ₃ -N)	mg/L	0.85	APHA 4500: (NH ₃)-C
38	Sulphide, (H ₂ S)	mg/L	< 0.5	APHA 4500: (S ₂)-D
39	Molybdenum, (Mo)	mg/L	< 0.01	APHA-3120B
40	Arsenic, (As)	mg/L	< 0.01	APHA 3120B
41	Total Suspended Solids, (TSS)	mg/L	854.0	APHA 2540-D

*****End of Test Report*****

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FOR ENVIRO-TECH SERVICES

CHECKED BY

For Enviro-Tech Services

Md Humra
Quality Manager

AUTHORIZED SIGNATORY

Format No: ETS/LAB/TR-10; Issue No: 05; Date: 01.04.2019; Amd. No: 04 Date: 01.04.2019

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TEST REPORT

TEST REPORT NO.: ETS/650-11/05/2021

DATE OF REPORT 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021

Analysis Start Date : 25.05.2021

Analysis End Date : 30.05.2021

Sampling Done By : ETS STAFF

Sampling Description : GROUND WATER

Sampling Location : WW-2, CORE ZONE

Sampling Method : ETS/STP/WATER-02

Sample Quantity : 2.0 + 0.5 Ltr.

Packing Condition : SEALED

Packed In : P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	< 5	5	15	APHA 2120-B
2	Odour	---	Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH	---	7.05	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µs/cm	856	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	< 1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	564	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	180.52	200	600	APHA 2340-C
8	Calcium (Ca)	mg/L	35.1	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	22	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	173	200	600	APHA 2320-B
11	Chloride (Cl)	mg/L	200	250	1000	APHA 4500 (Cl)-J-B
12	Sulphate (SO ₄)	mg/L	20.7	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.22	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	<0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.17	1	1.5	APHA 4500 (F)-J-D
16	Nitrate (NO ₃ -)	mg/L	10.2	45	No Relaxation	APHA 4500 (NO ₃)-B
17	Copper (Cu)	mg/L	<0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	<0.005	0.1	0.3	APHA-3120B
19	Mercury (Hg)	ug/L	<0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	<0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	<0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	<0.005	0.01	No Relaxation	APHA 3120B
24	Zinc (Zn)	mg/L	<0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	<0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	<0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	<0.001	0.5	No Relaxation	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	<0.01	0.2	1	APHA 5540-C
30	Cyanide (CN)*	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN)-D
31	Total Coliform Count	MPN/100mL	< 2	Shall Not Be Detectable		IS 1622
32	Escherichia coli	MPN/100mL	< 2	Shall Not Be Detectable		IS 1622
33	Barium (Ba)	mg/L	<0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N)*	mg/L	<0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	<0.05	0.05	No Relaxation	APHA 4500 (S ₂)-D
36	Molybdenum (Mo)	mg/L	<0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	<0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	<2.0	Not Specified	Not Specified	APHA 2540-D

*****End of Test Report*****

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Note:-

CHEMICAL REPORT shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the company.

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TEST REPORT

TEST REPORT NO.: ETS/650-12/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021

Analysis Start Date : 25.05.2021

Analysis End Date : 30.05.2021

Sampling Done By : ETS STAFF

Sampling Description : GROUND WATER

Sampling Location : WW-3, CORE ZONE

Sampling Method : ETS/STP/WATER-02

Sample Quantity : 2.0 + 0.5 Ltr.

Packing Condition : SEALED

Packed In : P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	<3	5	15	APHA 2120-B
2	Odour	—	Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH	—	8.71	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µs/cm	800	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	<1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	472	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	143.1	200	600	APHA 2340-C
8	Calcium (Ca)	mg/L	29.7	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	16.8	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	144	200	600	APHA 2320-B
11	Chloride (Cl)	mg/L	179	250	1000	APHA 4500 (Cl)-B
12	Sulphate (SO ₄)	mg/L	15.1	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.22	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	<0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.21	1	1.5	APHA 4500 (F)-D
16	Nitrate (NO ₃)	mg/L	8.6	45	No Relaxation	APHA 4500 (NO ₃)-B
17	Copper (Cu)	mg/L	<0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	<0.005	0.1	0.3	APHA 3120B
19	Mercury (Hg)	ug/L	<0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	<0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	<0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
24	Zinc (Zn)	mg/L	<0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	<0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	<0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	<0.001	0.5	No Relaxation	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	<0.01	0.2	1	APHA 5540-C
30	Cyanide (CN)*	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN)-D
31	Total Coliform Count	MPN/100mL	<2	Shall Not Be Detectable		IS 1522
32	Escherichia coli	MPN/100mL	<2	Shall Not Be Detectable		IS 1522
33	Barium (Ba)	mg/L	<0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N)*	mg/L	<0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	<0.05	0.05	No Relaxation	APHA 4500 (S ₂)-D
36	Molybdenum (Mo)	mg/L	<0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	<0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	<2.0	Not Specified	Not Specified	APHA 2540-D

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Plot No. 1/32, South Side G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063



ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO.: ETS/650-13/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021

Analysis Start Date : 25.05.2021

Analysis End Date : 30.05.2021

Sampling Done By : ETS STAFF

Sampling Description : GROUND WATER

Sampling Location : WW-4, VADASITHUK

Sampling Method : ETS/STP/WATER-02

Sample Quantity : 2.0 + 0.5 Ltr.

Packing Condition : SEALED

Packed In : P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	< 5	5	15	APHA 2120-B
2	Odour	---	Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH	---	7.55	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µs/cm	959	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	< 1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	366	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	189.59	200	600	APHA 2340-C
8	Calcium (Ca)	mg/L	33.8	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	25.6	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	186.1	200	600	APHA 2320-B
11	Chloride (Cl)	mg/L	210	250	1000	APHA 4500 (Cl)-B
12	Sulphate (SO ₄)	mg/L	19.2	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.22	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	< 0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.15	1	1.5	APHA 4500 (F)-D
16	Nitrate (NO ₃)	mg/L	9.7	45	No Relaxation	APHA 4500 (NO ₃)-B
17	Copper (Cu)	mg/L	< 0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	< 0.005	0.1	0.3	APHA-3120B
19	Mercury (Hg)	ug/L	< 0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	< 0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	< 0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	< 0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	< 0.005	0.01	No Relaxation	APHA-3120B
24	Zinc (Zn)	mg/L	< 0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	< 0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	< 0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	< 0.001	0.5	No Relaxation	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	< 0.01	0.2	1	APHA 5540-C
30	Cyanide (CN)*	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN)-D
31	Total Coliform Count	MPN/100ml	< 2	Shall Not Be Detectable		IS 1622
32	Escherichia coli	MPN/100mL	< 2	Shall Not Be Detectable		IS 1622
33	Barium (Ba)	mg/L	< 0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N)*	mg/L	< 0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	< 0.05	0.05	No Relaxation	APHA 4500 (S ₂)-D
36	Molybdenum (Mo)	mg/L	< 0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	< 0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	< 2.0	Not Specified	Not Specified	APHA 2540-D

*****End of Test Report*****

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For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

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TEST REPORT

TEST REPORT NO.: ETS/650-14/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021

Analysis Start Date : 25.05.2021

Analysis End Date : 30.05.2021

Sampling Done By : ETS STAFF

Sampling Description : GROUND WATER

Sampling Location : BW-5, CORE ZONE

Sampling Method : ETS/STP/WATER-02

Sample Quantity : 2.0 + 0.5 Ltr.

Packing Condition : SEALED

Packed In : P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	< 5	5	15	APHA 2120-B
2	Odour		Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH		7.57	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µs/cm	825	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	< 1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	486	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	132.84	200	500	APHA 2340-C
8	Calcium (Ca)	mg/L	22.1	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	18.9	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	150	200	600	APHA 2320-B
11	Chloride (Cl)	mg/L	165.2	250	1000	APHA 4500 (Cl)-B
12	Sulphate (SO ₄)	mg/L	17.1	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.11	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	<0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.16	1	1.5	APHA 4500 (F)-D
16	Nitrate (NO ₃)	mg/L	7.7	45	No Relaxation	APHA 4500 (NO ₃)-B
17	Copper (Cu)	mg/L	<0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	<0.005	0.1	0.3	APHA-3120B
19	Mercury (Hg)	ug/L	<0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	<0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	<0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
24	Zinc (Zn)	mg/L	<0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	<0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	<0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	<0.001	0.5	No Relaxation	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	<0.01	0.2	1	APHA 5540-C
30	Cyanide (CN) ⁻	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN)-D
31	Total Coliform Count	MPN/100ml	< 2	Shall Not Be Detectable		IS 1522
32	Escherichia coli	MPN/100ml	< 2	Shall Not Be Detectable		IS 1522
33	Barium (Ba)	mg/L	<0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N) ⁺	mg/L	<0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	<0.05	0.05	No Relaxation	APHA 4500 (S ₂)-D
36	Molybdenum (Mo)	mg/L	<0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	<0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	<20	Not Specified	Not Specified	APHA 2540-D

Page 1 of 1

****End of Test Report****

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TEST REPORT

TEST REPORT NO.: ETS/650-15/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE
ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Date of Sampling : 20.05.2021
Analysis Start Date : 25.05.2021
Analysis End Date : 30.05.2021
Sampling Done By : ETS STAFF
Sampling Description : GROUND WATER
Sampling Location : BW-6, CORE ZONE
Sampling Method : ETS/STP/WATER-02
Sample Quantity : 2.0 + 0.5 Ltr.
Packing Condition : SEALED
Packed In : P.V.C AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	<5	5	15	APHA 2120-B
2	Odour	---	Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH	---	7.08	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µm/cm	888	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	<1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	524	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	201.95	200	600	APHA 2340-C
8	Calcium (Ca)	mg/L	38.1	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	26	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	157.3	200	600	APHA 2320-B
11	Chloride (Cl)	mg/L	176	250	1000	APHA 4500 (Cl)-B
12	Sulphate (SO ₄)	mg/L	19.4	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.22	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	<0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.16	1	1.5	APHA 4500 (F)-D
16	Nitrate (NO ₃)	mg/L	6.8	45	No Relaxation	APHA 4500 (NO ₃)-B
17	Copper (Cu)	mg/L	<0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	<0.005	0.1	0.3	APHA-3120B
19	Mercury (Hg)	ug/L	<0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	<0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	<0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
24	Zinc (Zn)	mg/L	<0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	<0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	<0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	<0.001	0.5	No Relaxation	IS 3025 (Part-38)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	<0.01	0.2	1	APHA 5540-C
30	Cyanide (CN)*	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN)-D
31	Total Coliform Count	MPN/100ml	<2	Shall Not Be Detectable	IS 1622	
32	Escherichia coli	MPN/100ml	<2	Shall Not Be Detectable	IS 1622	
33	Barium (Ba)	mg/L	<0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N)*	mg/L	<0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	<0.05	0.05	No Relaxation	APHA 4500 (S ₂)-D
36	Molybdenum (Mo)	mg/L	<0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	<0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	<2.0	Not Specified	Not Specified	APHA 2540-D

****End of Test Report****

Page 1 of 1

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Mo. Director
Quality Manager

AUTHORIZED SIGNATURE

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TEST REPORT

TEST REPORT NO.: ETS/650-16/05/2021

DATE OF REPORT: 31.05.2021

WATER SAMPLE ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER GUARRIES

Date of Sampling : 20.05.2021

Analysis Start Date : 25.05.2021

Analysis End Date : 30.05.2021

Sampling Done By : ETS STAFF

Sampling Description : GROUND WATER

Sampling Location : BW-7, CHETTIPALAYAM

Sampling Method : ETS/STP/WATER-02

Sample Quantity : 2.0 + 0.5 Ltr.

Packing Condition : SEALED

Packed In : P.V.C. AND GLASS BOTTLE

S. No.	Test Parameter	Unit	Result	Specification/Limit (As per IS:10500: 2012)		Test Method
				Desirable	Permissible	
1	Colour	Hazen	<5	5	15	APHA 2120-B
2	Odour	...	Agreeable	Agreeable	Agreeable	APHA 2150-B
3	pH	...	8.27	6.5 - 8.5	No Relaxation	APHA 4500-H+
4	Conductivity	µs/cm	754	Not Specified	Not Specified	APHA 2510-B
5	Turbidity	NTU	<1	1	5	APHA 2130-B
6	Total Dissolved Solids (TDS)	mg/L	451	500	2000	APHA 2540-C
7	Total Hardness (CaCO ₃)	mg/L	109.5	200	600	APHA 2340-C
8	Calcium (Ca)	mg/L	20.3	75	200	APHA 3500 (Ca)-B
9	Magnesium (Mg)	mg/L	12.9	30	100	APHA 3500 (Mg)-B
10	Total Alkalinity (CaCO ₃)	mg/L	146	200	800	APHA 2320-B
11	Chloride (Cl)	mg/L	162	250	1000	APHA 4500 (Cl ⁻)-B
12	Sulphate (SO ₄)	mg/L	13.8	200	400	APHA 4500 (SO ₄)-E
13	Iron (Fe)	mg/L	0.18	0.3	No Relaxation	APHA-3120B
14	Chlorine (Residual)	mg/L	<0.1	0.2	1	APHA 4500 (Cl)-B
15	Fluoride (F)	mg/L	0.20	1	1.5	APHA 4500 (F ⁻)-D
16	Nitrate (NO ₃ ⁻)	mg/L	8.4	45	No Relaxation	APHA 4500 (NO ₃ ⁻)-B
17	Copper (Cu)	mg/L	<0.005	0.05	1.5	APHA 3120B
18	Manganese (Mn)	mg/L	<0.005	0.1	0.3	APHA-3120B
19	Mercury (Hg)	ug/L	<0.001	0.001	No Relaxation	APHA-3114C
20	Cadmium (Cd)	mg/L	<0.001	0.003	No Relaxation	APHA 3120B
21	Selenium (Se)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
22	Aluminium (Al)	mg/L	<0.01	0.03	0.2	APHA-3120B
23	Lead (Pb)	mg/L	<0.005	0.01	No Relaxation	APHA-3120B
24	Zinc (Zn)	mg/L	<0.005	5	15	APHA-3120B
25	Total Chromium (Cr)	mg/L	<0.05	Not Specified	Not Specified	APHA-3120B
26	Boron (B)	mg/L	<0.01	0.5	1	APHA 4500 (B)-C
27	Mineral Oil	mg/L	<0.001	0.5	No Relaxation	IS 3025 (Part-39)
28	Phenolic Compound (C ₆ H ₅ OH)	mg/L	Absent	0.001	0.002	APHA 5530-C
29	Anionic Detergent (MBAS)	mg/L	<0.01	0.2	1	APHA 5540-C
30	Cyanide (CN) ⁻	mg/L	Absent	0.05	No Relaxation	APHA 4500 (CN ⁻)-D
31	Total Coliform Count	MPN/100mL	< 2	Shall Not Be Detectable		IS 1622
32	Escherichia coli	MPN/100mL	< 2	Shall Not Be Detectable		IS 1622
33	Barium (Ba)	mg/L	<0.005	0.7	No Relaxation	APHA 3120B
34	Ammonia (as Total NH ₃ -N) ¹	mg/L	<0.05	0.5	No Relaxation	APHA 4500 (NH ₃)-C
35	Sulphide (H ₂ S)	mg/L	<0.05	0.05	No Relaxation	APHA 4500 (S ²⁻)-D
36	Molybdenum (Mo)	mg/L	<0.005	0.07	No Relaxation	APHA-3120B
37	Arsenic (As)	mg/L	<0.005	0.01	0.05	APHA 3120B
38	Total Suspended Solids (TSS)	mg/L	<2.0	Not Specified	Not Specified	APHA 2540-D

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TEST REPORT

TEST REPORT NO : ETS/850-1/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE
ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-1 SOUTH EAST CORNER

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Fugitive Dust	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07.00-07.00	63.8	24.1	44.7	8.9	25.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	07.15-07.15	64.7	22.8	42.6	7.7	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	07.00-07.00	63.5	23.3	43.4	10.3	24.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	07.15-07.15	62.8	24.9	41.8	8.4	26.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	07.00-07.00	62.5	23.7	43.6	7.6	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	07.15-07.15	64.7	23.5	45.5	10.5	25.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	07.00-07.00	65.5	23.1	46.5	9.3	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	07.15-07.15	62.3	22.6	42.9	10.4	24.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	07.00-07.00	63.5	23.7	45.3	8.7	25.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	07.15-07.15	62.4	22.1	43.9	10.3	26.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	07.00-07.00	63.8	23.2	43.7	9.6	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	07.15-07.15	65.2	21.7	42.6	11.2	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	07.00-07.00	61.5	24.4	42.5	10.5	26.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07.15-07.15	63.7	23.9	43.3	9.4	24.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07.00-07.00	62.5	23.8	42.7	10.6	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07.15-07.15	66.8	23.3	42.8	9.3	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07.00-07.00	64.2	24.4	43.4	8.7	25.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07.15-07.15	63.5	23.6	42.9	10.5	24.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07.00-07.00	65.5	21.5	45.1	11.2	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07.15-07.15	62.9	23.7	43.6	9.4	25.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07.00-07.00	64.4	22.9	43.7	10.2	26.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07.15-07.15	63.4	23.1	42.8	11.5	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07.00-07.00	62.9	23.5	41.9	8.3	24.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07.15-07.15	62.3	22.8	43.6	8.7	25.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07.00-07.00	62.7	23.1	44.3	9.6	25.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07.15-07.15	62.5	22.5	42.8	8.9	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

End of Test Report

For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

Page 1 of 1

Mid Humraj

Quality Manager

AUTHORIZED SIGNATORY

Note:-

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- The results indicated only refer to the tested samples and listed applicable parameters.
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- No complaint will be entertained if received after 7 days of issue of test report.

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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-2/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-2 CORE ZONE

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Fugitive Dust	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase) $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07:15-07:15	63.7	19.6	43.9	8.3	16.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	07:30-07:30	61.2	20.9	41.8	8.1	20.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	07:15-07:15	60.9	18.7	42.7	8.2	21.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	07:30-07:30	62.5	20.3	40.4	8.6	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	07:15-07:15	63.6	21.4	40.6	8.7	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	07:30-07:30	62.8	22.5	41.9	5.6	21.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	07:15-07:15	61.4	24.1	40.3	8.2	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	07:30-07:30	65.9	23.6	42.4	8.4	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	07:15-07:15	63.1	23.8	43.1	8.3	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	07:30-07:30	62.9	24.7	41.8	8.9	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	07:15-07:15	60.7	23.6	42.6	9.2	21.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	07:30-07:30	62.8	23.5	42.8	9.3	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	07:15-07:15	62.3	21.8	42.5	9.7	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	62.5	20.3	43.4	9.3	26.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	63.9	23.5	42.6	9.1	24.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	63.4	21.2	43.4	9.7	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	61.2	19.7	42.9	9.2	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	65.9	20.3	43.6	8.6	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	65.1	21.4	42.5	8.4	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	62.8	21.6	42.7	8.2	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	62.9	20.5	43.3	8.7	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	63.6	21.3	42.9	8.6	21.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	64.4	22.6	41.6	8.7	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	63.9	20.8	42.5	9.3	22.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	63.1	21.7	42.6	9.2	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	32.7	21.5	42.7	9.1	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05



For Enviro-Tech Services

Quality Manager

Note:-

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- The results indicated only refer to the tested samples and do not apply for the parameters not tested.
- Our liability is limited to invoice value only.
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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-3/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAO-3 CORE ZONE

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Fugitive Dust (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase) $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*			60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07:15-07:15	62.8	22.8	42.7	7.3	25.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	07:30-07:30	61.8	26.4	46.3	7.9	24.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	07:15-07:15	64.5	25.3	45.5	7.6	26.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	07:30-07:30	63.9	23.9	45.9	7.1	25.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	07:15-07:15	65.7	26.7	46.3	7.6	27.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	07:30-07:30	65.6	23.9	46.7	8.6	24.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	07:15-07:15	64.7	24.4	42.3	8.1	26.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	07:30-07:30	62.9	25.3	45.8	8.3	25.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	07:15-07:15	63.5	26.8	45.5	8.1	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	07:30-07:30	62.8	23.9	46.3	7.3	24.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	07:15-07:15	65.8	26.4	46.6	7.6	27.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	07:30-07:30	62.4	24.5	46.7	7.1	26.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	07:15-07:15	63.5	26.5	45.2	7.2	28.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	64.6	26.7	43.9	7.3	26.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	65.8	23.9	42.7	7.5	25.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	65.3	25.5	42.8	7.6	25.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	65.9	26.7	46.4	7.1	25.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	66.2	26.3	46.1	7.2	24.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	63.6	25.4	43.9	7.8	28.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	65.7	25.8	46.5	8.3	25.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	64.8	26.9	46.7	8.4	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	65.9	26.3	42.8	8.6	26.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	65.4	25.7	46.3	7.1	26.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	63.2	24.9	45.9	7.4	26.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	61.7	24.7	44.2	7.6	25.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	62.9	24.3	44.1	7.1	25.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

****End of Test Report****

For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

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- The results indicated only refer to the tested samples and listed analytes as per the contract.
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[Signature]
 Quality Manager
 AUTHORIZED SIGNATORY



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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-4/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, GHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-4 CORE ZONE

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Fugitive Dust	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.		PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₂ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	07.00-07.00	63.2	22.8	41.4	6.3	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	07.15-07.15	61.9	21.9	43.2	6.7	24.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	07.00-07.00	62.4	20.5	41.9	6.5	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	07.15-07.15	63.6	23.1	43.5	7.6	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	07.00-07.00	62.7	22.9	41.7	7.9	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	07.15-07.15	61.6	22.4	42.4	7.5	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	07.00-07.00	62.5	21.6	43.6	7.8	22.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	07.15-07.15	61.9	21.9	41.7	7.6	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	07.00-07.00	64.4	23.5	42.3	7.1	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	07.15-07.15	62.3	21.9	44.4	7.5	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	07.00-07.00	62.8	21.4	45.5	7.8	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	07.15-07.15	63.5	22.5	42.5	7.8	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	07.00-07.00	62.9	23.8	43.8	7.6	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07.15-07.15	62.4	21.1	44.2	6.3	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07.00-07.00	65.5	22.4	41.9	6.4	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07.15-07.15	62.9	22.5	44.3	6.8	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07.00-07.00	63.7	20.3	42.9	6.7	23.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07.15-07.15	62.4	21.2	42.4	6.1	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07.00-07.00	62.3	21.8	42.7	6.1	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07.15-07.15	62.8	22.7	41.9	7.6	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07.00-07.00	63.7	24.3	43.2	7.8	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07.15-07.15	62.5	21.9	44.8	7.1	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07.00-07.00	62.6	24.2	42.4	7.5	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07.15-07.15	62.1	23.4	42.9	7.6	21.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07.00-07.00	61.5	26.3	42.7	7.9	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07.15-07.15	62.8	25.7	42.9	7.1	24.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

FOR ENVIRO-TECH SERVICES

Page 1 of 1

Note:-

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3. The results indicated only refer to the tested samples and listed applicable parameters.
4. Our liability is limited to invoice value only.
5. No complaint will be entertained if received after 7 days of issue of test report.

For Enviro-Tech Services

[Signature]
 Quality Manager
 AUTHORIZED SIGNATORY



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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-5/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis-Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAO-5 MALUMICHAMPATTY

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	Fugitive Dust (24 hrs.)	PM2.5 (24 hrs.)	PM10 (24 hrs.)	SO ₂ (24 hrs.)	NO ₂ (24 hrs.)	NH ₃ (24 hrs.)	O ₃ (8-hly Avg.) (8 hrs.)	CO (8-hly Avg.) (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ (24 hrs.)	As, ng/m^3 (annual)	Ni, ng/m^3 (annual)	C ₆ H ₆ , ng/m^3 (annual)	BaP, ng/m^3 (annual)
NAAQ Norms*			60	100	80	80	400	100	2.0	1.0	6.0	20	5.0	1.0
02.03.2021	07:30-07:30	65.8	25.5	42.9	6.3	25.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	07:45-07:45	63.8	23.7	45.4	6.7	21.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	07:30-07:30	64.9	24.4	43.3	6.8	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	07:45-07:45	65.7	23.3	43.7	6.4	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	07:30-07:30	63.6	25.7	42.4	6.2	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	07:45-07:45	65.9	23.8	42.6	6.7	22.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	07:30-07:30	67.2	25.5	45.1	6.2	21.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	07:45-07:45	66.4	24.1	43.4	6.9	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	07:30-07:30	62.3	23.9	43.8	6.1	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	07:45-07:45	65.3	25.4	41.9	6.2	22.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	07:30-07:30	62.8	23.7	43.6	6.7	20.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	07:45-07:45	64.1	24.1	42.4	6.2	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	07:30-07:30	62.3	23.5	42.5	5.6	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	62.7	23.6	44.7	5.9	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	62.3	25.5	43.4	7.1	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	63.4	24.4	42.5	7.6	21.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	62.8	23.9	41.9	7.1	24.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	63.3	25.4	42.4	7.2	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	62.9	21.5	43.6	7.9	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	64.6	23.8	45.4	7.1	25.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	65.5	22.5	46.6	7.5	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	62.8	25.4	43.7	7.6	26.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	61.6	23.9	42.8	7.1	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	63.9	24.7	41.9	7.6	26.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	62.3	24.3	42.6	6.5	25.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	61.8	23.7	42.7	6.1	24.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

End of Test Report

For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

Page 1 of 1

AUTHORIZED SIGNATORY

Note:-

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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-6/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-6 OTHAKALMANDAPAM

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase) $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	Fugitive Dust (24 hrs.)	PM2.5 (24 hrs.)	PM10 (24 hrs.)	SO ₂ (24 hrs.)	NO ₂ (24 hrs.)	NH ₃ (24 hrs.)	O ₃ (8-hly Avg.) (8 hrs.)	CO (8-hly Avg.) (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ (24 hrs.)	As, ng/m^3 (annual)	Ni, ng/m^3 (annual)	C ₆ H ₆ , ng/m^3 (annual)	BaP, ng/m^3 (annual)
NAAQ Norms*			60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	08:00-08:00	62.3	22.7	41.3	7.6	21.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	08:15-08:15	62.8	23.4	42.7	8.6	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	08:00-08:00	61.6	21.6	43.4	8.1	21.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	08:15-08:15	63.8	23.5	41.8	8.3	20.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	08:00-08:00	64.4	22.8	43.6	7.1	21.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	08:15-08:15	62.3	25.5	42.4	7.6	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	08:00-08:00	64.9	23.7	41.8	7.1	21.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	08:15-08:15	64.2	21.9	43.9	7.6	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	08:00-08:00	62.5	23.6	42.7	6.5	21.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	08:15-08:15	63.8	21.4	42.6	6.4	23.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	08:00-08:00	61.7	23.7	40.7	6.6	21.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	08:15-08:15	62.9	21.8	40.9	6.1	21.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	08:00-08:00	63.5	21.3	42.5	6.4	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	61.4	22.5	41.9	6.7	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	63.6	24.6	42.4	6.2	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	62.7	25.7	43.7	6.9	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	62.5	23.5	41.9	6.1	21.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	63.9	21.6	42.6	6.8	22.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	62.6	25.9	42.2	7.3	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	62.1	23.1	46.1	7.5	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	62.3	25.3	44.5	7.1	24.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	64.4	24.1	42.5	7.5	22.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	64.7	26.9	43.7	7.3	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	62.3	23.7	43.9	7.1	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	61.2	24.9	42.1	7.8	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	61.8	23.7	42.7	7.2	22.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

****End of Test Report****



AUTHORIZED SIGNATORY

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TEST REPORT

TEST REPORT NO : ETS/650-7/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-7 CHETTIPALAYAM

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase) $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	Fugitive Dust (24 hrs.)	PM2.5 (24 hrs.)	PM10 (24 hrs.)	SO ₂ (24 hrs.)	NO ₂ (24 hrs.)	NH ₃ (24 hrs.)	O ₃ (8-hly Avg.) (8 hrs.)	CO (8-hly Avg.) (8hrs.)	Pb, $\mu\text{g}/\text{m}^3$ (24 hrs.)	As, ng/m^3 (annual)	Ni, ng/m^3 (annual)	C ₂ H ₅ , ng/m^3 (annual)	BaP, ng/m^3 (annual)
NAAQ Norms*			60	100	80	80	400	100	2.0	1.0	6.0	20	5.0	1.0
02.03.2021	08:00-08:00	61.9	23.3	43.7	6.8	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	08:15-08:15	63.7	21.6	41.9	6.3	22.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	08:00-08:00	62.8	22.4	42.6	6.1	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	08:15-08:15	64.2	23.9	43.8	5.8	23.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	08:00-08:00	63.9	22.6	42.7	5.2	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	08:15-08:15	62.5	23.5	43.5	5.1	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	08:00-08:00	61.9	21.7	41.6	5.3	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	08:15-08:15	64.7	22.8	43.6	5.0	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	08:00-08:00	61.9	25.3	42.5	5.8	23.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	08:15-08:15	63.7	23.9	44.9	5.6	23.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	08:00-08:00	62.9	21.7	41.9	5.1	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	08:15-08:15	62.5	24.4	43.6	5.8	24.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	08:00-08:00	63.8	23.6	42.7	6.6	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	61.4	25.9	43.6	6.5	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	62.5	21.7	41.9	6.4	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	63.9	23.3	42.5	5.5	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	61.5	25.6	43.4	5.6	23.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	62.8	25.7	41.9	5.1	22.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	63.6	21.9	42.4	5.6	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	64.9	22.1	41.8	5.7	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	62.3	24.3	43.4	6.2	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	62.8	21.9	42.7	6.3	21.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	62.5	23.7	43.6	6.5	20.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	61.7	22.4	41.9	6.1	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	61.2	21.3	41.9	6.8	20.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	61.5	21.5	42.5	6.4	20.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

End of Test Report
For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

Page 1 of 1

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ENVIRO-TECH SERVICES

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email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

TEST REPORT

TEST REPORT NO : ETS/650-8/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-8 VADASITHUR

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	Fugitive Dust	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.03.2021	08:00-08:00	57.6	22.1	43.5	5.5	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	08:15-08:15	57.2	21.9	44.3	5.3	21.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	08:00-08:00	58.8	22.5	42.1	5.4	20.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	08:15-08:15	56.2	21.4	43.9	5.9	19.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	08:00-08:00	56.4	21.6	42.4	5.1	19.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	08:15-08:15	56.8	21.5	43.7	5.5	20.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	08:00-08:00	57.3	22.5	43.3	5.7	21.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	08:15-08:15	57.5	21.1	42.7	5.5	20.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	08:00-08:00	58.8	22.5	42.9	5.3	20.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	08:15-08:15	56.2	22.9	43.0	5.9	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	08:00-08:00	56.3	23.4	43.8	5.1	20.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	08:15-08:15	56.8	22.1	43.1	5.7	21.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	08:00-08:00	57.2	21.6	43.6	5.3	20.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	57.4	22.5	42.8	5.7	20.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	57.9	21.6	42.3	5.2	21.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	56.2	22.4	43.7	5.9	19.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	56.3	23.5	43.1	5.7	19.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	56.8	22.1	42.8	5.0	19.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	56.1	22.7	43.5	5.9	19.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	57.3	22.5	42.3	5.6	19.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	57.7	22.4	43.1	5.3	19.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	57.9	21.5	42.9	5.1	19.2	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	56.6	23.1	42.1	5.5	20.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	56.2	24.6	43.7	5.7	20.0	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	57.9	22.5	42.8	5.8	20.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	57.6	22.9	43.2	5.9	20.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

*End of Test Report For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

Page 1 of 1

AUTHORIZED SIGNATORY

Note:-

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3. The results indicated only refer to the tested samples and listed applicable parameters.
4. Our liability is limited to invoice value only.
5. No complaint will be entertained if received after 7 days of issue of test report.

Enviro-Tech Services Pvt. Ltd. ISO 9001:2015, 14001:2015, 45001:2018 Certified. Issue No. ETS/650-8/05/2021, Amd. No. 04 Date 01.04.2019

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TEST REPORT

TEST REPORT NO : ETS/650-9/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAQ-9 VADASITHUR

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR. (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Fugitive Dust (24 hrs.)	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase) ng/m^3				
Date	Period, hrs.		PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)	
02.03.2021	08:00-08:00	62.9	20.3	43.2	5.3	23.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	08:15-08:15	62.0	20.9	43.5	5.3	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	08:00-08:00	62.8	21.3	43.9	5.6	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	08:15-08:15	62.4	21.4	43.7	5.4	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	08:00-08:00	50.2	21.6	43.5	5.3	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	08:15-08:15	60.8	21.7	44.6	6.5	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	08:00-08:00	60.4	20.3	44.2	6.1	23.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	08:15-08:15	60.9	20.1	44.3	6.5	21.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	08:00-08:00	61.2	20.4	43.5	6.1	21.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	08:15-08:15	61.5	19.3	44.3	6.4	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	08:00-08:00	61.9	19.7	42.5	6.8	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	08:15-08:15	61.2	18.3	42.6	6.3	22.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	08:00-08:00	60.2	18.9	41.6	6.4	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	59.7	19.4	42.7	6.9	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	59.8	20.3	44.6	6.7	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	60.2	21.3	42.3	6.8	22.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	60.9	23.2	42.3	6.1	22.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	61.3	22.5	43.8	6.4	22.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	61.7	22.4	43.7	7.3	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	61.5	23.5	43.6	7.5	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	61.6	21.2	43.2	7.6	23.4	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	61.8	21.3	42.3	7.1	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	61.3	21.5	42.9	7.5	22.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	61.0	20.3	42.7	7.6	23.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	62.3	21.3	42.9	7.8	22.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	62.5	21.5	42.5	7.9	22.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

End of Test Report

For Enviro-Tech Services

FOR ENVIRO-TECH SERVICES

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AUTHORIZED SIGNATORY

[Signature]

Dr. Humra



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TEST REPORT

TEST REPORT NO : ETS/650-10/05/2021

DATE OF REPORT : 31.05.2021

AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Analysis Start Date : 05.03.2021

Analysis End Date : 31.05.2021

Sampling Done By : ETS STAFF

Sampling Location : AAG-10 VADASITHUR

Sampling Method : ETS/STP/AIR-01

Sampling Machine Placed At Height : 1.5 MTR (FROM GROUND)

Weather Condition : CLEAR

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	Fugitive Dust (24 hrs.)	PM2.5 (60(24 hrs.))	PM10 (100 (24 hrs.))	SO ₂ (80 (24 hrs.))	NO ₂ (80 (24 hrs.))	NH ₃ (400 (24 hrs.))	O ₃ (8-hly Avg.) (100 (8 hrs.))	CO (8-hly Avg.) (2.0 (8hrs.))	Pb, $\mu\text{g}/\text{m}^3$ (1.0 (24 hrs.))	As, ng/m^3 (6.0 (annual))	Ni, ng/m^3 (20 (annual))	C ₂ H ₆ , ng/m^3 (5.0 (annual))	BaP, ng/m^3 (1.0 (annual))
02.03.2021	08:00-08:00	60.7	21.7	40.7	8.6	13.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
03.03.2021	08:15-08:15	61.9	23.5	40.3	8.1	24.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
09.03.2021	08:00-08:00	62.5	21.9	42.1	7.6	24.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
10.03.2021	08:15-08:15	63.8	23.6	43.6	7.2	23.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
16.03.2021	08:00-08:00	60.9	22.9	40.5	7.8	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
17.03.2021	08:15-08:15	64.4	24.1	40.2	7.6	23.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
23.03.2021	08:00-08:00	62.3	23.6	40.8	7.1	24.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
24.03.2021	08:15-08:15	62.7	20.9	41.9	7.5	24.8	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
30.03.2021	08:00-08:00	61.3	24.1	43.7	8.0	24.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
31.03.2021	08:15-08:15	62.7	23.5	41.2	8.3	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
06.04.2021	08:00-08:00	62.8	21.8	43.9	8.2	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
07.04.2021	08:15-08:15	63.6	24.3	42.4	8.1	25.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
13.04.2021	08:00-08:00	62.7	21.7	43.6	7.5	25.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
14.04.2021	07:15-07:15	63.7	23.4	43.8	7.1	25.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
20.04.2021	07:00-07:00	62.9	21.8	41.7	6.9	25.5	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
21.04.2021	07:15-07:15	61.9	21.5	44.2	6.8	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
27.04.2021	07:00-07:00	64.7	23.7	42.6	6.5	23.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
28.04.2021	07:15-07:15	63.9	21.6	42.8	6.2	23.6	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
04.05.2021	07:00-07:00	65.5	22.5	43.4	6.1	23.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
05.05.2021	07:15-07:15	64.4	23.9	41.5	6.5	24.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
11.05.2021	07:00-07:00	61.9	21.7	42.1	6.4	24.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
12.05.2021	07:15-07:15	62.3	22.5	42.7	6.5	24.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
18.05.2021	07:00-07:00	61.7	21.8	43.2	6.8	25.9	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
19.05.2021	07:15-07:15	63.6	20.7	42.3	6.5	26.7	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
25.05.2021	07:00-07:00	61.5	21.3	42.6	6.4	25.1	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05
26.05.2021	07:15-07:15	61.3	21.5	42.1	6.1	25.3	<5	<5	<0.1	<0.05	<1.0	<1.0	<1.0	<0.05

End of Test Report
For Enviro-Tech Services

Page 1 of 1

FOR ENVIRO-TECH SERVICES

Quality Manager

Note:-

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- No complaint will be entertained if received after 7 days of issue of test report.

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ISO 9001/14001/45001

Particulate matter PM _{2.5}					
Station ID	Max	Min	Mean	98 Percentile Value	STDEV
AAQ-1	24.9	21.5	23.3	24.25	0.80
AAQ-2	24.7	18.7	21.7	23.7	1.56
AAQ-3	26.9	22.8	25.4	26.7	1.16
AAQ-4	26.3	20.3	22.6	24.25	1.43
AAQ-5	25.7	21.5	24.2	25.5	1.00
AAQ-6	26.9	21.3	23.6	25.6	1.51
AAQ-7	25.9	21.3	23.2	25.45	1.41
AAQ-8	23.5	18.3	20.9	22.45	1.25
AAQ-9	24.3	20.7	22.5	24	1.11
AAQ-10	24.6	21.1	22.4	23.25	0.77
Particulate matter PM ₁₀					
Station ID	Max	Min	Mean	98 Percentile Value	STDEV
AAQ-1	46.5	41.8	43.5	45.2	1.13
AAQ-2	43.9	40.3	42.4	43.4	0.92
AAQ-3	46.7	42.3	45.2	46.7	1.51
AAQ-4	45.5	41.4	43.0	44.4	1.04
AAQ-5	46.6	41.9	43.4	45.3	1.22
AAQ-6	46.1	40.7	42.7	43.9	1.17
AAQ-7	44.9	41.6	42.8	43.7	0.84
AAQ-8	44.6	41.6	43.3	44.3	0.80
AAQ-9	44.2	40.2	42.3	43.8	1.19
AAQ-10	44.3	42.1	43.1	43.8	0.59
Sulphur Di-oxide as SO ₂					
Station ID	Max	Min	Mean	98 Percentile Value	STDEV
AAQ-1	11.5	7.6	9.6	10.9	1.07
AAQ-2	9.7	5.6	8.7	9.4	0.79
AAQ-3	8.6	7.1	7.6	8.4	0.49
AAQ-4	7.9	6.1	7.2	7.8	0.61
AAQ-5	7.9	5.6	6.7	7.6	0.61
AAQ-6	8.6	6.1	7.1	8.0	0.66
AAQ-7	6.8	5	5.9	6.6	0.56
AAQ-8	7.9	5.3	6.6	7.6	0.80
AAQ-9	8.6	6.1	7.2	8.2	0.76
AAQ-10	5.9	5	5.5	5.9	0.29
Oxide of Nitrogen as NO ₂					
Station ID	Max	Min	Mean	98 Percentile Value	STDEV
AAQ-1	26.8	23.4	25.0	26.5	1.05
AAQ-2	26.7	16.7	22.4	23.9	1.86
AAQ-3	28.4	24.2	26.0	27.6	1.11
AAQ-4	25.9	21.4	23.0	24.2	1.03
AAQ-5	26.4	20.7	23.6	25.8	1.64
AAQ-6	24.9	20.9	22.4	23.8	1.08
AAQ-7	24.5	20.2	22.7	23.9	1.26
AAQ-8	23.8	21.5	23.0	23.6	0.67
AAQ-9	26.7	13.5	24.2	25.7	2.34
AAQ-10	21.6	19.1	20.3	21.4	0.75

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TABLE 3.20: ABSTRACT OF AMBIENT AIR QUALITY DATA

Sl. No.	Parameter	Pollutant Concentration, $\mu\text{g}/\text{m}^3$			
		PM _{2.5}	PM ₁₀	SO ₂	NO ₂
1	No. of Observations	260	260	260	260
2	10th Percentile Value	21.10	41.89	5.60	20.60
3	20th Percentile Value	21.50	42.30	6.10	21.60
4	30th Percentile Value	21.80	42.50	6.40	22.30
5	40th Percentile Value	22.50	42.70	6.70	22.82
6	50th Percentile Value	22.90	42.90	7.10	23.50
7	60th Percentile Value	23.50	43.40	7.50	23.70
8	70th Percentile Value	23.73	43.60	7.73	24.10
9	80th Percentile Value	24.30	43.90	8.30	24.90
10	90th Percentile Value	25.41	45.10	9.10	25.72
11	95th Percentile Value	25.90	46.10	9.61	26.50
12	98th Percentile Value	26.66	46.50	10.50	26.80
13	Arithmetic Mean	23.57	43.72	7.69	23.87
14	Geometric Mean	23.51	43.69	7.56	23.79
15	Standard Deviation	1.85	1.55	1.54	1.99
16	NAAQ Norms*	60	100	80	80
17	% Values exceeding Norms*	0	0	0	0

Legend: PM_{2.5}-Particulate Matter size less than 2.5 μm ; PM₁₀-Respirable Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NO₂-Oxides of Nitrogen; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia;

Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits

* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.



FOR ENVIRO-TECH SERVICES

Page 1 of 1

For Enviro-Tech Services

M. H. H. H.
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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-17/05/2021

DATE OF REPORT : 31.05.2021

NOISE MONITORING REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Monitoring Start Date : 20.05.2021

Monitoring End Date : 21.05.2021

Monitoring Done By : ETS STAFF

Sampling Method : ETS/STP/NOISE-01

Category Of Area : INDUSTRIAL AREA

Location		N1 - Core Zone			N2 - Core Zone			N3 - Core Zone				
S.No	Time (Hrs)	Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)		
1	600	40.1	49.5	47	42.6	45.6	44.4	47.3	50.1	48.9		
2	700	41.5	51.2	48.6	42.6	45.1	44	46.2	51.2	49.4		
3	800	42.6	52.6	50	43.2	45.2	44.3	46.1	48.6	47.5		
4	900	42.6	53.1	50.5	44.9	49.8	48	47.2	46.2	46.7		
5	1000	43.1	45.8	44.7	41.9	50.6	48.1	46.2	49.1	47.9		
6	1100	44.5	46.6	45.7	42.5	52.6	50	45.1	47.3	46.3		
7	1200	45.6	47.8	46.8	44.2	54.2	51.6	46.9	49.2	48.2		
8	1300	46.9	49.6	48.5	41.6	51.6	49	46.2	48.8	47.7		
9	1400	47.1	50.2	48.9	42.2	53.5	50.8	45.7	46.7	46.2		
10	1500	45.4	51.8	49.7	42.6	54.5	51.8	46.3	48.2	47.4		
11	1600	43.6	52.8	50.3	43.2	46.5	45.2	48.1	50.2	49.3		
12	1700	44.8	52.6	50.3	43.5	48.3	46.5	46.8	51.5	49.8		
13	1800	46.2	55.3	52.8	42.5	47.6	45.8	47.3	53.5	51.4		
14	1900	43.5	52.1	49.7	40.9	49.6	47.1	48.9	50.5	49.8		
15	2000	40.9	50.2	47.7	43.5	47.6	46	42.6	55.3	52.5		
16	2100	40.5	49.8	47.3	41.5	47.1	45.1	40.9	51.9	49.2		
17	2200	38.6	46.9	44.5	38.2	45.6	43.3	41.6	53.2	50.5		
18	2300	37.5	38.1	37.8	39.8	43.5	42	35.1	43.6	41.2		
19	0	36.1	40.5	38.8	37.6	43.7	41.6	36.4	47.2	44.5		
20	100	35.3	39.7	38	36.8	42.5	40.5	32.9	37.5	35.8		
21	200	36.1	38.6	37.5	37.3	44.1	41.9	31.6	39.8	37.4		
22	300	33.5	35.8	34.8	37.1	39.1	38.2	32.7	37.5	35.7		
23	400	34.1	37.8	36.3	35.9	39.8	38.3	32.5	36.9	35.2		
24	500	34.6	36.9	35.9	36.5	38.2	37.4	31.4	35.5	33.9		
Day Mean dB(A)				48.4	Day Mean dB(A)			47.1	Day Mean dB(A)			48.7
Night Mean dB(A)				37	Night Mean dB(A)			40	Night Mean dB(A)			37.7

Page 1 of 1

End of Test Report
For Enviro-Tech Services

FOR ENVIROTECH SERVICES

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401 A



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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-16/05/2021

DATE OF REPORT : 31.05.2021

NOISE MONITORING REPORT

Name And Address of Customer : ARASAMPALAYAM, GHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH
STONE AND GRAVEL CLUSTER QUARRIES

Monitoring Start Date : 21.05.2021

Monitoring End Date : 22.05.2021

Monitoring Done By : ETS STAFF

Sampling Method : ETS/STP/NOISE-01

Category Of Area : INDUSTRIAL AREA

S.No	Time (Hrs)	N4 - Core Zone			N5 - Malumichampatty			N6 - Othakalmandapam				
		Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)		
1	600	32.6	36.6	35	40.4	45.3	43.5	46.8	48.8	47.9		
2	700	34.5	40.2	38.2	41.8	46.3	44.6	49.5	50.1	49.8		
3	800	35.2	39.5	37.9	41.6	45.5	44	47.2	52.6	50.7		
4	900	36.8	38.4	37.7	42.8	50.2	47.9	46.5	47.5	47		
5	1000	36.9	37.6	37.3	45.5	48.8	47.5	48.3	52.3	50.7		
6	1100	38.1	45.5	43.2	46.8	51.3	49.6	45.9	48.1	47.1		
7	1200	34.9	40.5	38.5	47.7	50.2	49.1	47.2	49.5	48.5		
8	1300	37.2	41.3	39.7	48.1	50.3	49.3	45.8	51.2	49.3		
9	1400	36.2	43.6	41.3	47.9	51.6	50.1	46.1	57.6	54.9		
10	1500	35.9	44.8	42.3	48.5	51.3	50.1	47.3	54.5	52.2		
11	1600	36.5	38.4	37.6	47.7	51.8	50.2	46.8	53.2	51.1		
12	1700	32.5	40.9	38.5	46.1	50.4	48.8	47.1	53.5	51.4		
13	1800	34.4	43.4	40.9	45.1	50	48.2	46.2	54.3	51.9		
14	1900	31.2	39.7	37.3	45.2	48.7	47.3	48.5	51.3	50.1		
15	2000	36.9	46.5	43.9	46.1	49.5	48.1	35.1	46.3	43.6		
16	2100	32.5	40.8	38.4	44.1	45.5	44.9	36.4	45.7	43.2		
17	2200	36.1	44.3	41.9	43.2	44.6	44	33.7	44.6	41.9		
18	2300	34.1	39.9	37.9	31.5	38.9	36.6	36.1	40.2	38.6		
19	0	32.9	37.8	36	36.7	38.2	37.5	34.2	38.7	37		
20	100	33.5	36.9	35.5	35.7	36.9	36.3	33.9	39.9	37.9		
21	200	33.7	35.8	34.9	31.2	34.6	33.2	32.8	34.9	34		
22	300	32.5	34.5	33.6	34.2	36.8	35.7	33.1	36.6	35.2		
23	400	33.4	36.6	35.3	33.5	35.9	34.9	36.2	38.8	37.7		
24	500	33.5	35.5	34.6	32.2	35.6	34.2	33.4	38.2	36.4		
Day Mean dB(A)				39.4	Day Mean dB(A)			47.5	Day Mean dB(A)			48.9
Night Mean dB(A)				35.4	Night Mean dB(A)			35.5	Night Mean dB(A)			36.7

Page 1 of 1

FOR ENVIRETECH SERVICES

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End of Test Report

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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-19/05/2021

DATE OF REPORT : 31.05.2021

NOISE MONITORING REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH
STONE AND GRAVEL CLUSTER QUARRIES

Monitoring Start Date : 05.03.2021

Monitoring End Date : 31.05.2021

Monitoring Done By : ETS-STAFF

Sampling Method : ETS/STP/NOISE-01

Category Of Area : INDUSTRIAL AREA

Location	N7 - Chettipalayam				N8 - Vadasithur		
S.No	Time (Hrs)	Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)
1	600	40.2	42.5	41.5	39.6	43.6	42
2	700	41.5	42.6	42.1	40.3	46.5	44.4
3	800	42.4	44.9	43.8	40.6	48.9	46.5
4	900	42.8	45.8	44.6	41.6	49.8	47.4
5	1000	43.8	47.6	46.1	41.9	50.6	48.1
6	1100	44.7	45.5	45.1	42.5	52.6	50
7	1200	45.6	49.9	48.3	43.5	49.8	47.7
8	1300	46.5	50.2	48.7	41.6	51.6	49
9	1400	46.4	52.5	50.4	41.5	53.5	50.8
10	1500	45.8	54.2	51.8	42.6	52.6	50
11	1600	44.2	54.7	52.1	41.6	46.5	44.7
12	1700	43.8	53.9	51.3	43.5	48.3	46.5
13	1800	42.7	54.2	51.5	42.5	47.6	45.8
14	1900	42.8	51.8	49.3	40.9	48.9	46.5
15	2000	41.9	50.4	48	43.5	47.6	46
16	2100	40.5	49.7	47.2	41.5	47.1	45.1
17	2200	41.5	46.9	45	39.8	45.6	43.6
18	2300	39.8	40.2	40	38.8	43.5	41.8
19	0	38.9	42.3	40.9	37.6	42.8	40.9
20	100	38.4	40.5	39.6	36.8	41.6	39.8
21	200	36.5	38.9	37.9	37.3	43.8	41.7
22	300	35.4	37.8	36.8	36.3	38.9	37.8
23	400	34.2	36.6	35.6	35.9	36.8	36.4
24	500	34.8	35.5	35.2	34.8	35.6	35.2
Day Mean dB(A)				47.5	Day Mean dB(A)		46.7
Night Mean dB(A)				38	Night Mean dB(A)		39.1

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FOR ENVIROTECH SERVICES

CHECKED BY

- The test report shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the laboratory.
- The sample shall be destroyed after 15 days & biological / toxicology sample shall be destroyed immediately after issue of test report.
- The results indicated only refer to the tested samples and listed applicable parameters.
- Our liability is limited to invoice value only.
- No complaint will be entertained if received after 7 days of issue of test report.

AUTHORIZED SIGNATORY

403 A



ENVIRO-TECH SERVICES

An Analytical Laboratory

An Environment, Food, Fuel, Soil & Biological Analytical Laboratory

(An ISO 9001:2015, 14001:2015 and 45001-2018 Certified Company)

Recognised by MoEF (Govt. of India), Accredited by ISO/IEC-17025:2017 (NABL) & UPPCB

Plot No. 1/32, South Side G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

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ISO 9001/14001/45001

TEST REPORT

TEST REPORT NO : ETS/650-20/05/2021

DATE OF REPORT : 31.05.2021

NOISE MONITORING REPORT

Name And Address of Customer : ARASAMPALAYAM, CHETTIPALAYAM & PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL CLUSTER QUARRIES

Monitoring Start Date : 05.03.2021

Monitoring End Date : 31.05.2021

Monitoring Done By : ETS STAFF

Sampling Method : ETS/STP/NOISE-01

Category Of Area : INDUSTRIAL AREA

Location	N9 - Arasampalayam				N10 - ponnakkani		
S.No	Time (Hrs)	Min dB(A)	Max dB(A)	dB(A)	Min dB(A)	Max dB(A)	dB(A)
1	600	41.2	46.2	44.4	33.9	40.5	38.3
2	700	41.5	48.2	46	36.1	43.6	41.3
3	800	46.2	57.1	54.4	33.2	44.9	42.2
4	900	47.1	49.5	48.5	34.7	43.2	40.8
5	1000	47.2	47.1	47.2	31.6	40.9	38.4
6	1100	47.8	48.2	48	32.5	41.2	38.7
7	1200	45.1	48.5	47.1	36.2	43.2	41
8	1300	44.3	47.5	46.2	35.9	44.8	42.3
9	1400	42.8	47.2	45.5	31.9	39.1	36.8
10	1500	43.5	49.2	47.2	33.6	41.4	39.1
11	1600	48.5	48.7	48.6	31.5	39.2	36.9
12	1700	47.6	56.4	53.9	32.8	40.7	38.3
13	1800	47.2	56.8	54.2	32.6	40.3	38
14	1900	47	56.9	54.3	32.7	41.7	39.2
15	2000	41.2	47.1	45.1	33.9	42.5	40.1
16	2100	42.1	45.2	43.9	34.2	43.1	40.6
17	2200	36.4	46.1	43.5	36.1	45.9	43.3
18	2300	36.4	42.7	40.6	33.8	41.7	39.3
19	0	36.7	41.9	40	31.9	40.3	37.9
20	100	37.5	40.5	39.3	33.1	41.9	39.4
21	200	37.5	38.8	38.2	32.9	33.9	33.4
22	300	37.9	38.8	38.4	31.3	34.8	33.4
23	400	35.1	36.8	36	33.8	36.5	35.4
24	500	35.8	36.5	36.2	31.9	38.5	36.3
Day Mean dB(A)				48.1	Day Mean dB(A)		39.7
Night Mean dB(A)				38.4	Night Mean dB(A)		36.5

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****End of Test Report****

Note: 1. This test report shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the laboratory.
 2. For Environment, Food, Fuel, Soil & Biological / Perishable sample shall be destroyed immediately after issue of test report.
 3. The results indicated only refer to the tested samples and listed applicable parameters.
 4. Our liability is limited to invoice value only.
 5. No complaint will be entertained if received after 7 days of issue of test report.

AUTHORIZED SIGNATORY

404 R

Form No. ETS/AB/FR/02, Rev. No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019



National Accreditation Board for Education and Training



Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

95/1, Brindavan Road, 4th Cross East, Fairlands, Salem – 636 016 Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.